UK Research and Innovation

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Dear Norman

Thank you for your letter of 9th September regarding the Science and Technology Select Committee's inquiry into the impact of science funding policy on equality, diversity, inclusion and accessibility.

I am pleased to respond to each of the questions in turn and hope the responses will be useful in helping to frame the inquiry.

UK Research and Innovation (UKRI) recognises that equality, diversity and inclusion (EDI) – of people and ideas – is crucial for delivering excellence in research and innovation. As a research and innovation funder, as an employer and as an influential voice across research and innovation sectors, we have made EDI a priority in our first year.

To underpin our ambitions, we appointed Professor Jennifer Rubin, Executive Chair of the Economic and Social Research Council (ESRC), as the UKRI Executive Champion for Equality, Diversity and Inclusion in April 2018. Since then, she has recruited and Chairs an EDI External Advisory Group that brings together interdisciplinary experts from the UK and international public, private and charitable sectors to advise on UKRI's approach and priorities.[1] With the support and expertise of this group, we have developed our UKRI-wide EDI Strategic Framework, which launches later this Autumn 2019. This framework emphasises how we will create a research and innovation culture that supports an inclusive environment for everyone and how we will lead by example.

Professor Rubin has championed an evidence-based approach to EDI and was instrumental in the hiring of Dr Karen Salt to UKRI, who, as Deputy Director of Culture and Environment (Acting) offers senior leadership and support for peer review, EDI, research integrity, research culture, ethics, Open Access and bullying and harassment.

With the support of Professor Rubin and Dr Salt, UKRI teams have commissioned three evidence reviews to build the evidence base of what does and does not work to improve EDI outcomes, and identify where

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[1] Further information about the EAG is available from www.ukri.org/news/external-advisory-group-to-help-shape-ukris-equality-diversity-and-inclusion-agenda/.

there are gaps in knowledge that we must address. These reviews will be published alongside our strategic framework in late Autumn. We will continue to take an evidence-informed approach to shape our work in this area.

With the creation of UKRI, we have brought together nine organisations which fund and support a vast array of institutions, researchers, innovators and businesses. There is a significant effort underway to harmonise the data we collect across our Councils and bring it into one system. In doing so, we can identify disparities and ensure that we attract and retain talent from the widest possible pool. Our harmonisation work features as part of our five-year programme of work on EDI. We have begun this work and will continue building our capabilities during Year 1.

Before turning to the questions, there is one important caveat. UKRI does not hold data for external funding agencies. As such, in answering questions regarding 'funding agencies', we have responded with UKRI-held data and discuss UKRI processes.

Q1: Which UK bodies annually disburse more than £40 million public funding to either academia or industry for the purpose of research in science, technology, engineering, maths and medicine (STEMM), either as grants, fellowships or research contracts?

UKRI's total spend includes funding for STEMM and other disciplines. Every constitutive funding body within UKRI disburses more than £40m per annum (see the table, below). UKRI does not hold information on other UK bodies that disburse public funding but would suggest the Committee approach organisations including the UK Space Agency, National Institute of Health Research and the Defence Science and Technology Laboratory.

UKRI Council	2018/19 allocation
AHRC	£124m
BBSRC	£438m
EPSRC	£1,148m
ESRC	£224m
MRC	£717m
NERC	£441m
STFC	£725m
Research England	£2,217m
Innovate UK	£829m

Q2: What data pertaining to protected characteristics of applicants for funding do funding agencies collect and hold?

The seven Research Councils collect data on sex, disability, ethnicity and age. Since the creation of UKRI we have been working to harmonise this data and will be publishing the final dataset with a narrative in November 2019. We are also in the process of developing a new system that will collect data across additional characteristics. The first funding opportunity will be piloted through the new system in 2020.

Two of UKRI's constituent bodies – Research England and Innovate UK - predominantly fund organisations, not individuals (universities and businesses, respectively). Our approach going forward is to strengthen data collection across all UKRI bodies. Please see our answer to question four for further information.

Q3: For funding agencies that gather data relating to protected characteristics, for each of the last five years (or a shorter period if 5-year data is unavailable):

The statistics below represent key findings in the data, for example where there has been change over time, no change or where further action is needed. Some graphs have been included below to indicate change over time. We have also included an annex describing our statistical tests.

I or Professor Rubin would be very happy to meet the committee to provide more information on the data outlined in this letter and provide further analysis to give the committee a full picture of UKRI's work on EDI in preparation for the launch of this inquiry.

Please note: Some of this data has been produced specifically to answer the questions asked of UKRI. Data contained in these responses will be part of our publication in November 2019 as outlined in the summer announcement here.

The number of applications and awards with decisions by year are presented in Table 1.

Table 1

Financial Year	Principal Investigators		Co-Investigators		Fellows	
	Applications	Awardees	Applications	Awardees	Applications	Awardees
14/15	9,810	2,785	18,325	5,650	1,235	265
15/16	9,485	2,585	18,360	5,475	1,455	295
16/17	10,195	2,920	24,460	6,255	1,305	255
17/18	8,525	2,355	20,475	6,075	1,435	295
18/19	9,415	2,425	26,450	6,765	1,755	325

Note: 1. This dataset only includes applications with decisions (footnote 3).
2. All numbers are rounded to the nearest 5.

i) How does the number and proportion of applications received by the funding agency vary with each protected characteristic?

Please find below information on the number[2] of applications received by UKRI broken down by age, gender, disability and ethnicity[3]. These include data on Principal Investigators (PIs), Co-Investigators (CIs)

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[2] All numbers are rounded to the closest 5. Percentages and differences are based on actual numbers. Percentages are rounded and may not always add up to 100%. Averages and numbers for groups with 1 and 4 are suppressed to prevent disclosure.

[3] The database includes applications with decisions in a given year. The grants database used for diversity analysis excludes non-competitive grants such as institute grants, travel grants, algorithmic grants where the grant holders are not researchers and grants with 100% success or rejection rates. Additionally, fellowships and research grants with multiple Principal Investigators are excluded from diversity analysis. Data may include instances of applicants applying multiple time.

and Fellows. For PIs, the data also covers information on funding by responsive mode. There is correlation between age, gender and ethnicity and the proportion of applications at all three levels, which are detailed in the section below. The correlation between disability status and applications are less reliable due to likely issues with low level of disability disclosure, with only 1% declaring disability compared to the ONS estimate of 13% in the economically active population.[4] We have begun more advanced analysis to understand the degree to which personal characteristics influence application rates.

Age

Figure 1 shows the relative share of each age category at all three levels of applications.

- Among PIs, the largest proportion of applicants over the last 5 years tend to belong to the 40-49 age group (approx. 35%) and the lowest proportion belong to the under 29 age group (<3%). The relative proportion of applicants by age category has remained relatively stable over the last 5 years.
- Like for PIs, the largest proportion of CIs are from the 40-49 age group and the lowest proportion is from applicants. The relative proportion of applicants has remained steady over the last 5 years.
- For fellowships, the 30-39 age group form the highest proportion of applicants (approx. 65%) and the older age groups (50-59 and 60+) form the lowest proportion (4% and 1% approximately). This pattern is steady over the years.
- In all age categories in 2018/19, the number of applicants is divided quite evenly between responsive and managed mode with the largest divergence in the 50-59 age category where 54% of applications were for managed mode funding.

Figure 1

Proportion of applicants by age category as PIs, Fellows and CIs

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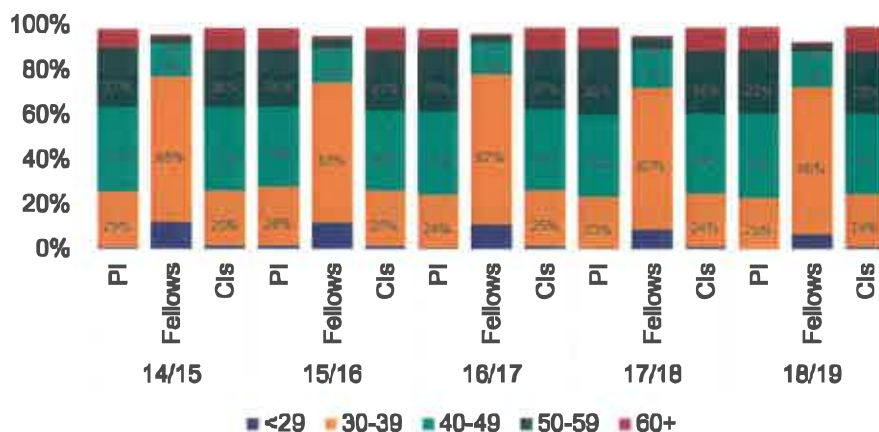
[4] Source : Table A08, Economic activity of people with disabilities

Disability

In all categories of applications, approximately 6% of applicants do not disclose their disability status. The relative share of those disclosing a disability has remained similar over the last 5 years for all three categories of applications.

- At 1%, the proportion of PI applicants (1%) who say that they have a disability has remained steady since 2014-15 (Figure 2). The proportion of applicants is similar for both CIs and Fellows.
- In 2018/19, UKRI received 135 (1%) applications from PIs who disclosed their disability compared to 8,660 (92%) applications from applicants those who said that they did not have a disability.
- In 2018/19, managed mode calls have a larger share of applicants relative to responsive mode, regardless of whether disability is disclosed.

Figure 2


Applications by disability status for PIs
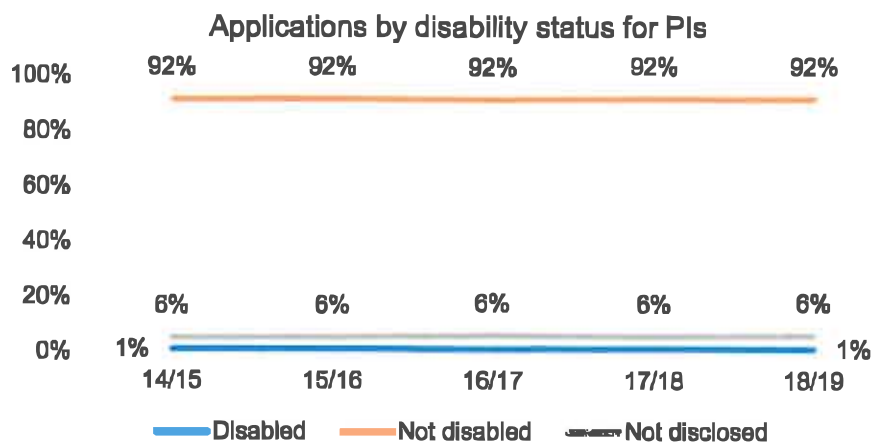
Gender

Between men and women, men form a larger proportion of applicants than women in all three categories. However, within the category of applications from women, women form a larger share of applicants at Fellow level compared to CI and PI level. (see FigureFigure 3)

- In 2018/19, UKRI received 2,675 (28%) applications from female PIs compared to 6,570 (70%) from male PIs.
- In 2018/19, UKRI received 1,256 applications for response mode funding from female applicants and 3,180 from male applicants. The share of applications for managed mode and responsive funding respectively is similar for both men (52% vs 48%) and women (53% vs 47%).
- For CIs in 2018/19, UKRI received 8,545 (32%) applications from female CIs and 17,545 (66%) applications from male CIs.
- In 2018/19 UKRI received 615 (35%) Fellow applications from female applicants compared to 1,040 (59%) from male applicants.

- As shown in Figure 3, the proportion of female co-investigator applicants has increased over the last 5 years (+5pp[5]). The increase in the proportion of female PIs and Fellow applicants is relatively smaller, although the proportion of female applicants for Fellowships was highest at 38% in 2016/17.

Figure 3

Proportion of female applicants as PIs, CIs and Fellow
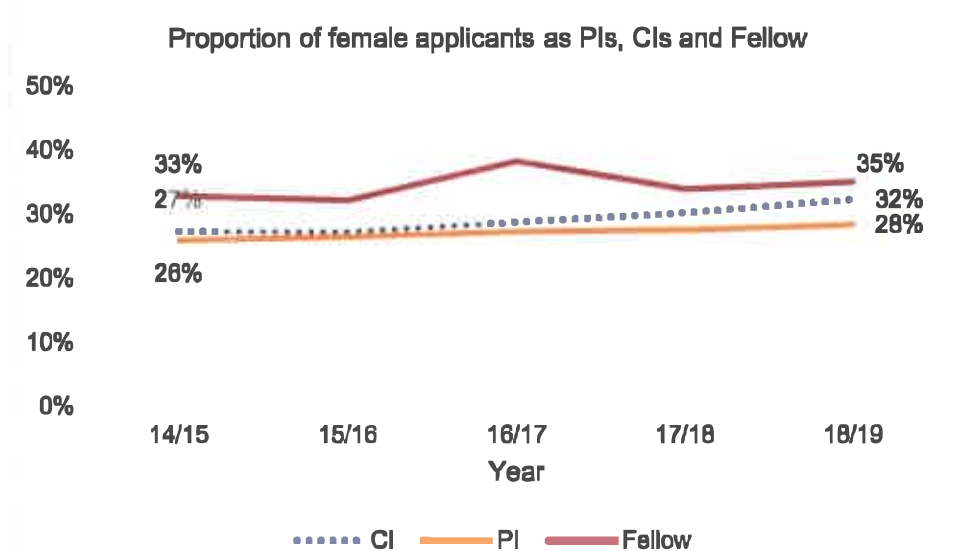
Ethnicity

In all categories of applications, between 8-10% of applicants do not disclose their ethnicity. White applicants form the majority of applicants, although there is an increase in ethnic minority applicants for CIs and Fellows since 2014/15 as seen in Figure 4.

- In 2018/19 UKRI received 1,215 applications from PIs from ethnic minorities (13%) and 7,460 applications from white applicants (79%). This pattern has remained relatively steady since 2014/15 when the proportion of ethnic minority applicants was 11% and that of white applicants was 81%.
- In 2018/19, UKRI received 550 applications for response mode funding from those in ethnic minorities and 3,655 from white applicants. In 2018/19, a majority of the ethnic minority (55%) applicants applied to managed mode calls
- In 2018/19, UKRI received 5,950 (22%) applications from CIs from ethnic minorities and 17,985 (68%) applications from white applicants. This is an increase of 10pp for ethnic minority CIs from 12% in 2014-15.
- In 2018/19, UKRI received 280 (16%) Fellowship applications from ethnic minorities, compared to 1,310 (75%) from white applicants. The 4pp increase in the share of ethnic minority applications masks annual fluctuations.

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[5] PP is percentage point

Figure 4

Ethnic minority applicants as PIs, CIs and Fellows
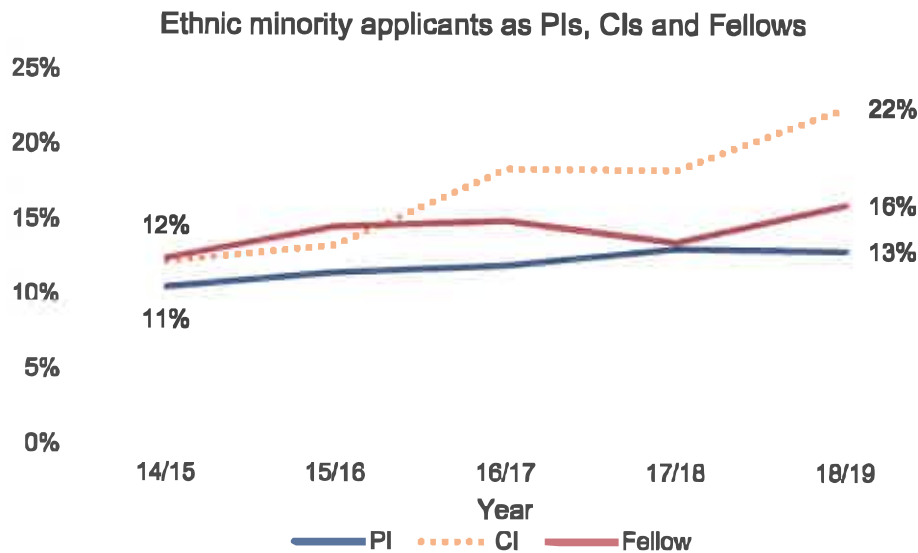
3ii) How does the success rate for all funding types (broken down by principal investigator and co-investigator, where appropriate) vary with each protected characteristic?

Please find below information on success rates for UKRI broken down by age, gender, disability and ethnicity. These include data on PIs, CIs and Fellows. For PIs the data also covers information on success rates for response mode funding. As this data is not a sample, a different approach to understanding the uncertainty that comes with these figures has been taken (more details are in Annex A). [6] Success rates vary by protected characteristics and year and we would require further analysis to understand the effect of the characteristic of interest. Like in 3 (i), we have to interpret the relation between disability and success rate with caution.

Age

- In 2018/19, the success rate for PIs in all age categories ranged from 25% to 27%.
- For PIs, while the under 29 age group form the smallest share of applicants among those with known ages, this group has the highest success rate in all years but 2015/16 (figure 5). The small size of the under 29 category means that it fluctuates more than any other category, as it is more susceptible to the effects of individual funding initiatives.
- The success rate for response mode funding for applicants aged 30-39 was 19% compared to 31% for other funding types. For 50-59 age category, the success rate for response mode funding was 22%. The older age categories have higher success rates in both types of applications.

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[6] As this data is not a sample, confidence intervals are not required. However, each characteristic has missing data and variability in the number of observations of the protected characteristics and the counterpart which could affect the conclusions and we have used sensitivity tests to address this. This approach creates two estimates for each success rate for the binary characteristics (disability, gender and ethnicity, but does not work for age). [See graphs with sensitivity boundaries in the Annex]

- For CIs, in 2018/19, the success rate for all age categories ranged from 22% to 27%, with the highest rate for 50-59 age group.
- There is annual variation in success rates for CIs. From having the highest success rate amongst all age groups in 2014/15 and 2015/16 (33% and 35%), the under 29 age group had the lowest success rate in 2018/19 (22%).
- In 2018/19, all the age categories for Fellowships have similar success rates, ranging from 18% to 20%. There is, however, yearly variation in success rates for all age groups.
- In prior years, the 50-59 age group has the highest success rates for Fellowships, compared to other age groups.
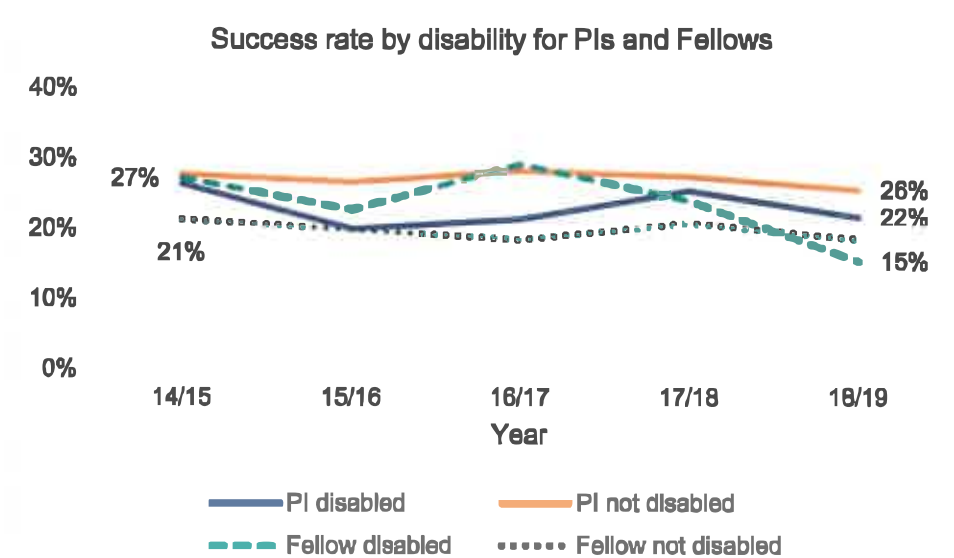
Figure 5

Success rate by age category, for PIs
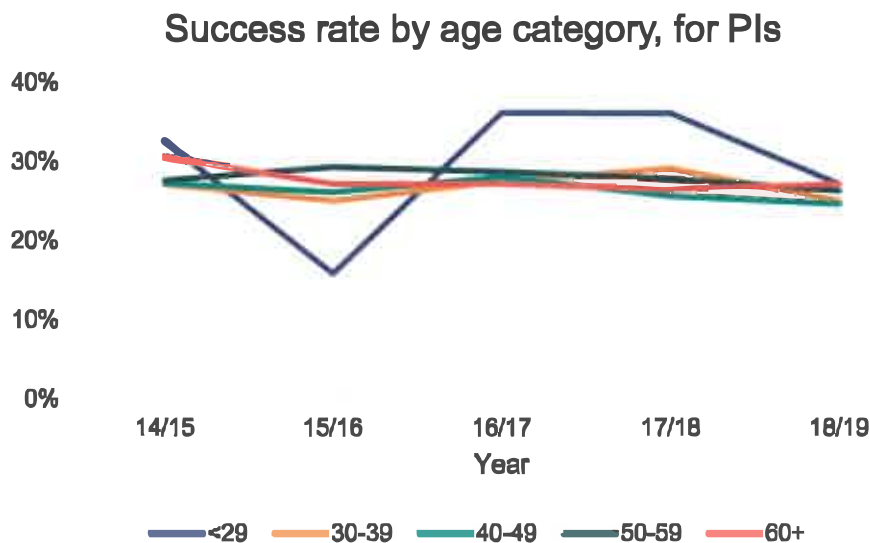
Disability

- As seen in Figure 6, in 2018/19 the success rate for PIs who said they were disabled was 22% compared to 26% for PIs who said they did not have a disability. The difference between the two groups ranges from 2pp to 7pp over the last five years.
- Success rates have fluctuated annually and declined for both groups of PIs in 2018/19 relative to 2014/15
- In 2018/19, the success rate for CIs is 25%, irrespective of whether they revealed their disability or not. There is fluctuation in the success rates in prior years.
- In 2018/19, the success rate for Fellowship applicants who said they had a disability was 15% and those who did not was 18%. In the previous four years, however, the pattern was the opposite with those with stated disabilities having higher success rates than those without.
- Due to the small number of applicants and awardees who disclose their disability and missing values for disability, we cannot be certain there is a meaningful difference in success rates based on disability.
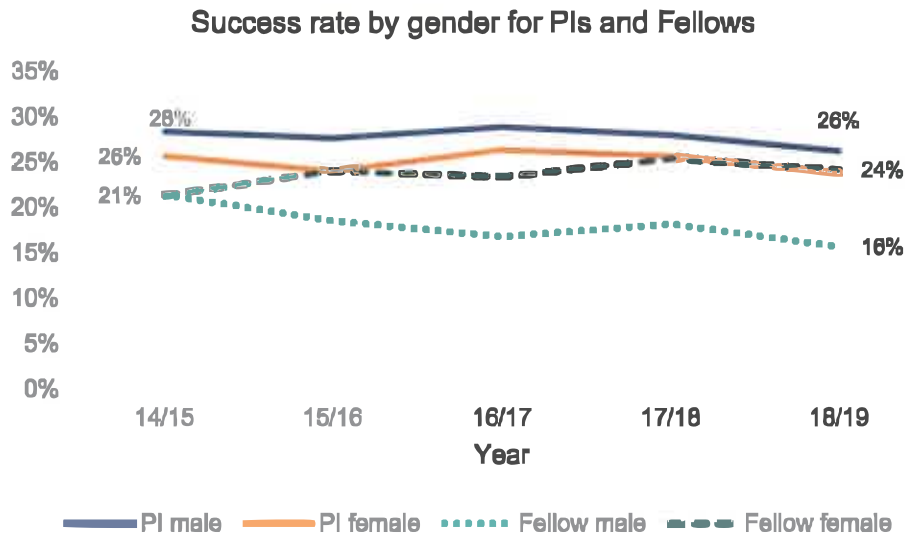
Figure 6

Success rate by disability for PIs and Fellows

Legend:
— PI disabled   — PI not disabled
--- Fellow disabled   ••••• Fellow not disabled

Gender

- In 2018/19 the success rate of female applicants at PI level was 24% compared to 26% for males. Men have higher success rates in all years, with the difference ranging from 2-4pp.
- In 2018/19, men have higher success rates than women in both responsive (21% v. 19%) and managed mode funding (31% vs. 28%).
- Male CIs have higher success rates than women in all years, but 2018/19 when there is no gap.
- As shown in Figure 7, women have higher success rates than men as Fellows, unlike that as female PIs. The success rate for female Fellow applicants in 2018/19 was 24% compared to 16% for males. Women have higher success rates than men in all years, but 2014/15 when the success rate was equal for both (21%).
- Despite a fairly small gap in success rates, the low level of missing data and relatively large numbers in both categories means we can be confident that the differences are unlikely to be the result of chance variation.

Figure 7

Success rate by gender for PIs and Fellows

Ethnicity

- In 2018/19, the success rate of applicants from ethnic minorities at PI level was 17% compared to 27% of white applicants. For PIs, white applicants have higher success rates than ethnic minority applicants in all years (Figure 8). Sensitivity analysis suggests that we can be confident that this difference exists. It is not the result of chance variation.
- In 2018/19, both ethnic minority and white applicants have higher success rates in managed modes than responsive mode calls, with white applicants having higher success rates than ethnic minority applicants in both types of calls.
- In 2018/19, the success rate for ethnic minorities and white applicants at CI level was 22% and 27% respectively. Ethnic minority CIs had consistently lower success rates than their white counterparts in previous years.
- In 2018/19 the success rate for ethnic minority applicants for Fellowships was 21% and 19% for white applicants, although missing data and relatively small number of observations means we cannot be confident in this difference. As seen in Figure 8, success rates for both ethnic minority and white applicants has remained relatively steady.

Figure 8

Success rate by ethnicity for PIs and Fellows
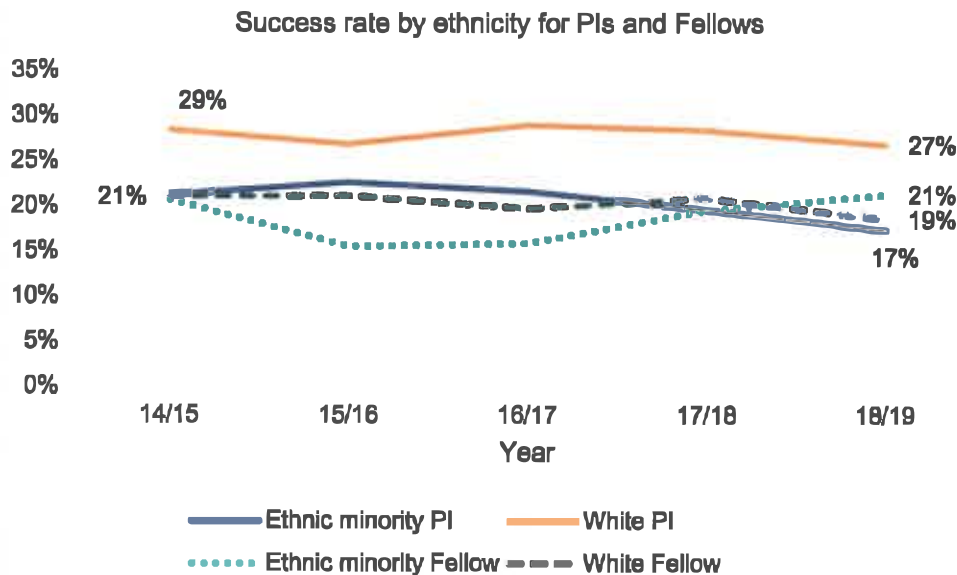
3iii. How does the total amount of funding awarded vary with each protected characteristic?

Please find below information on total amount of funding[7] awarded by UKRI broken down by age, gender, disability and ethnicity for PIs and Fellows, respectively. Please note that in this section average amounts refer to mean values.[8,9] This section also presents results by award size values.[10] While there is correlation between protected characteristic and mean award value, higher mean award values tend to reflect higher application amounts. These differences could be due to a number of factors such as experience and subject area, which will require further investigation.

Age

Applicants in older age categories tend to apply for and win larger awards.

- For PIs, in 2014/15 the average award size for 60+ was £691,000. As seen in Figure 9, older age categories (50-59 and 60+) have larger awards relative to other age groups. In 2018/19, the average amount awarded to those aged 40-49 was £609,000 compared to £998,000 of those aged 60+.
- In all award size categories, age categories 40-49 and 50-59 have the largest share of the grants over the last 5 years. Their share of the 'large' and 'very large' award category tends to exceed 70% of the awards.
- For Fellowships, like for research grants, the under 29 age group gets the smallest award amount, relative to other age groups as shown in all years (Figure 10). (Award amounts for 60+ age group for Fellowships are suppressed in all but 2015/16 due to small numbers.)

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[7] All award values are rounded to the nearest 1,000.
[8] Award amounts have inflation indexation removed to enable comparison with amounts applied for.
[9] Median award amount is less than the mean award. Preliminary analysis indicates that the relative award amounts for protected characteristics and their counterparts were in a similar direction for both estimates.
[10] Award size categories for research grants are as follows: 1. Small-Less than £200,000 2. Medium-£200,000-£1,000,000 3. Large-£1,000,000-£5,000,000 and 4. Very large-More than £5,000,000. The award amounts used for these categories include inflation indexation.
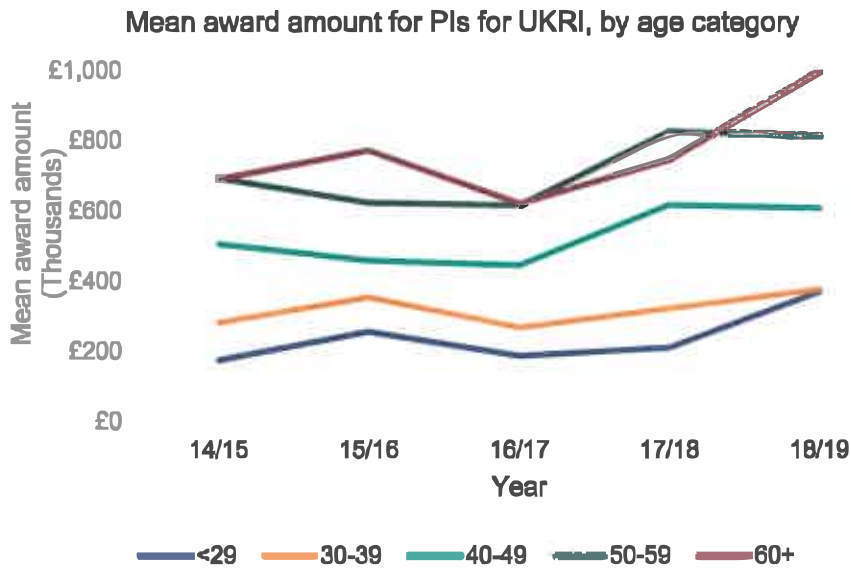
Figure 9

Mean award amount for PIs for UKRI, by age category

Legend: <29, 30-39, 40-49, 50-59, 60+

Figure 10

Mean Award amounts for fellows by age category
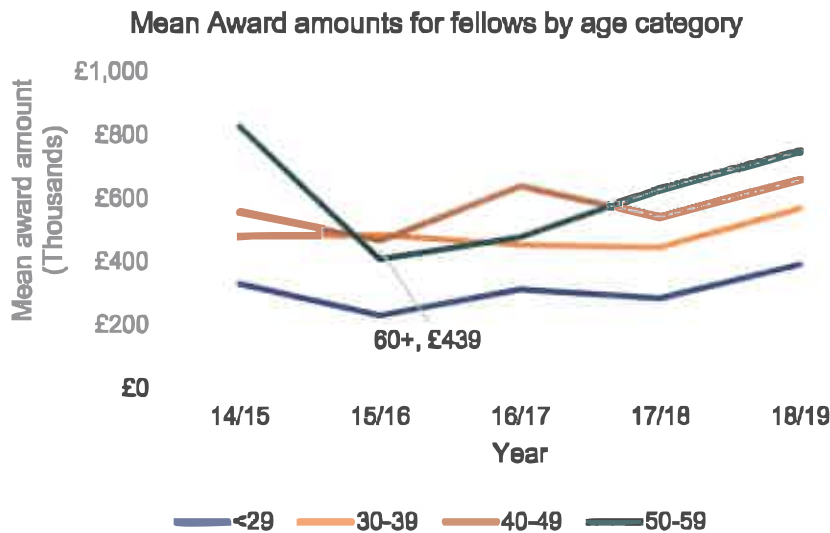

60+, £439

Legend: <29, 30-39, 40-49, 50-59

Note: Fellowship award amounts are suppressed for the 60+ age group due to low numbers (between 1 and 4) for all years, but 2015/16.

Disability

- Award amounts closely correlate to the differences in the average application amount by disability. The ratio of award amount to amount applied for is similar in all years except 2015/16 for PIs and in all years for Fellows.
- In 2018/19 the average amount awarded to PIs who disclose a disability was £327,000 compared to £653,000 to those who said they did not have a disability. The relative value of award amount of disabled and non-disabled applicants varies from year to year, with disabled awardees receiving higher amounts than non-disabled awardees in 2015/16 and 2017/18 as shown in Figure 11.
- Of 'large' awards given in 2018/19, 91% went to those who said they did not have a disability. This figure is similar for all award sizes.
- For Fellowships in 2018/19, UKRI awarded an average of £288,000 to applicants who disclosed their disability, compared to £580,000 to those who said they did not have a disability.
- Non-disabled applicants for Fellowships win larger awards than disabled applicants in all but one year (2017/18).
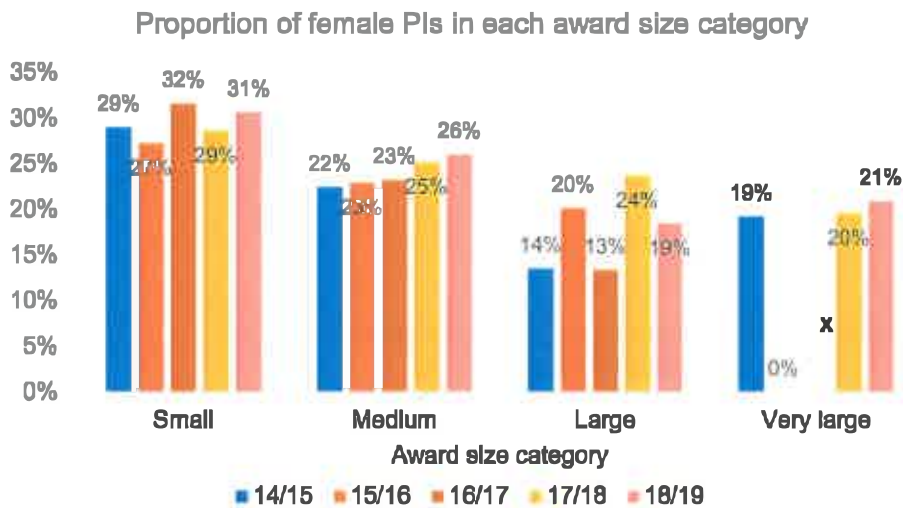
Figure 11

Mean award amount and award to application ratio by disability status for PIs
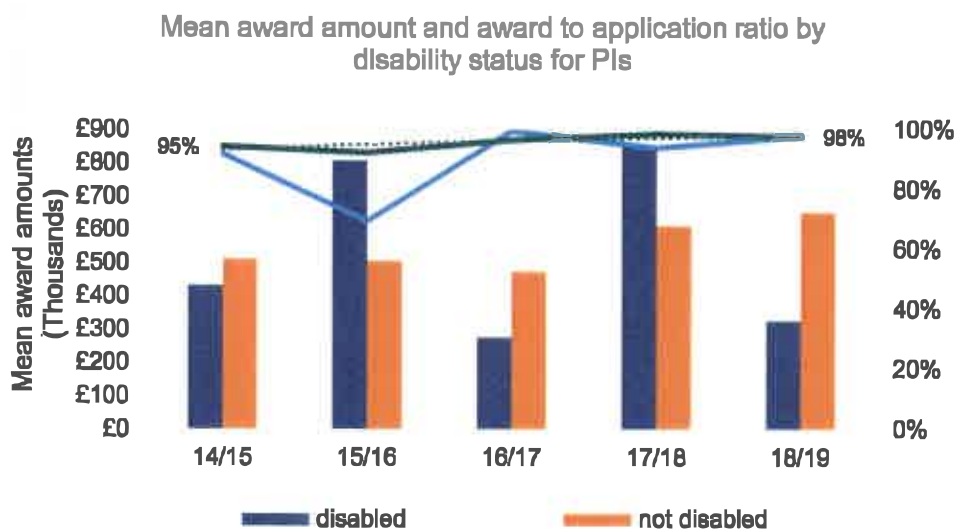
Note: The line graph refers to the proportion of award amount relative to the amount applied for.

Gender

- In 2018/19 the average amount awarded to female and male PI applicants was £640,000 and £672,000, respectively. The amount awarded to females is consistently less than that awarded to males. This disparity is correlated with a lower amount applied for by females compared to males. However, the ratio of award amounts to application amount is higher for women than for men in all years for research grants.
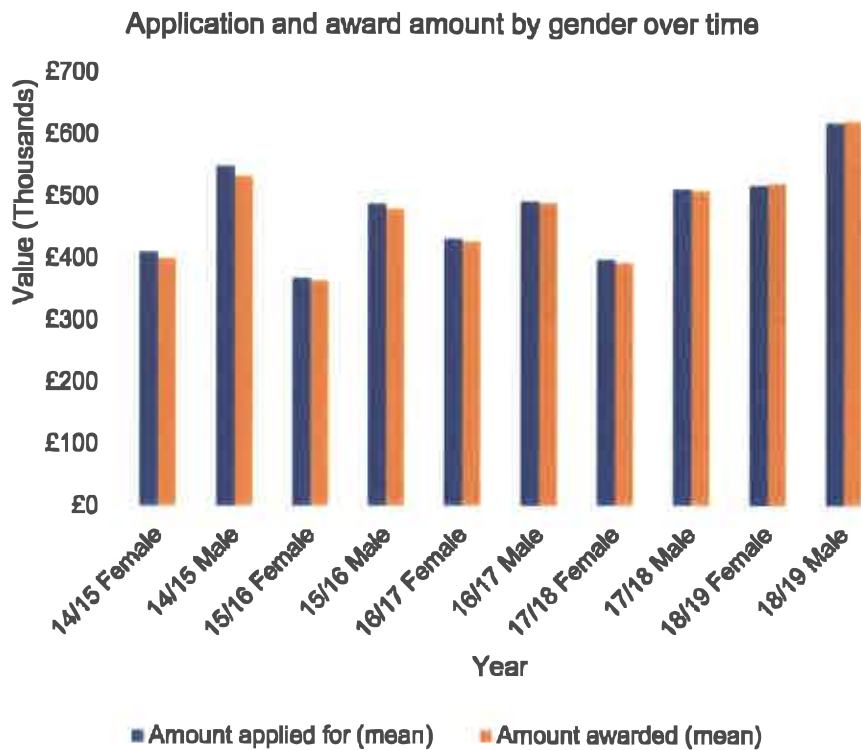
- By award size category, female PI led awards form a smaller proportion of all award size categories, compared to male PI led projects. In all years, they have higher representation in the 'small' award size category, compared to the 'medium, 'large' and 'very large' as illustrated in Figure 12.
- Fellowship awards for men are larger than that for women in all years. As shown in Figure 13, women apply for and win lower award amounts than men in all years, but the amount they win as a proportion of what they apply for is similar to or higher than that for men.

Figure 12

Proportion of female PIs in each award size category

'X' denotes results that have been suppressed due to small numbers (between 1 and 4).

Figure 13

Application and award amount by gender over time


Legend: ■ Amount applied for (mean)　■ Amount awarded (mean)

Ethnicity

- In 2018/19, the average amount awarded to PI applicants from an ethnic minority was £564,000 compared to £670,000 for white applicants. Ethnic minority awardees generally won amounts less than their white peers. This was the case in all years but 2014/15. It is also the case that white applicants apply for higher amounts than their ethnic minority counterparts in all years.
- The proportion of ethnic minorities in each award size category is between 7% and 11%. In 2018/19, 85% of large awards went to white applicants and 9% to ethnic minorities (Figure 14).
- For Fellowships, ethnic minority awardees have won larger awards in the last four years as shown in Figure 15. The award value as a proportion of amount applied for is similar for both groups of applicants.

Figure 14

Proportion of ethnic minorities in each award size category
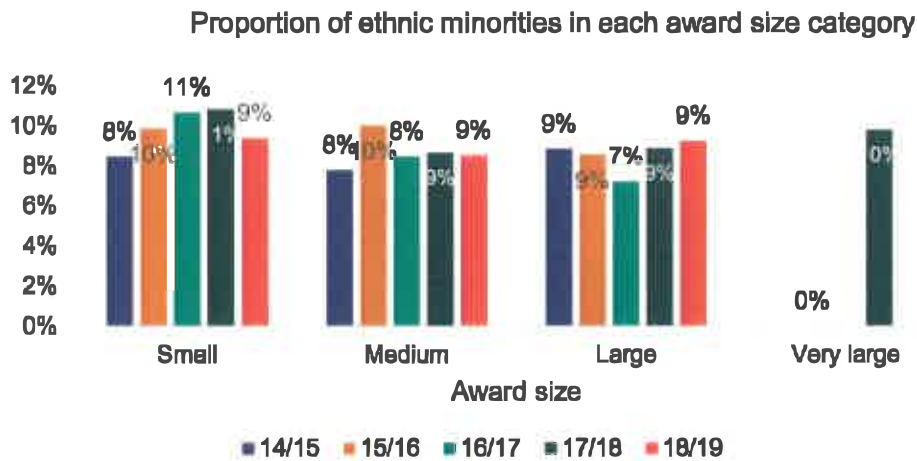
Note: The figure for the 'very large' grant award category is suppressed for 14/15 to 16/17 and 18/19 as the numbers are between 1 and 4.

Figure 15

Mean award value and award to application ratio by ethnicity for Fellows
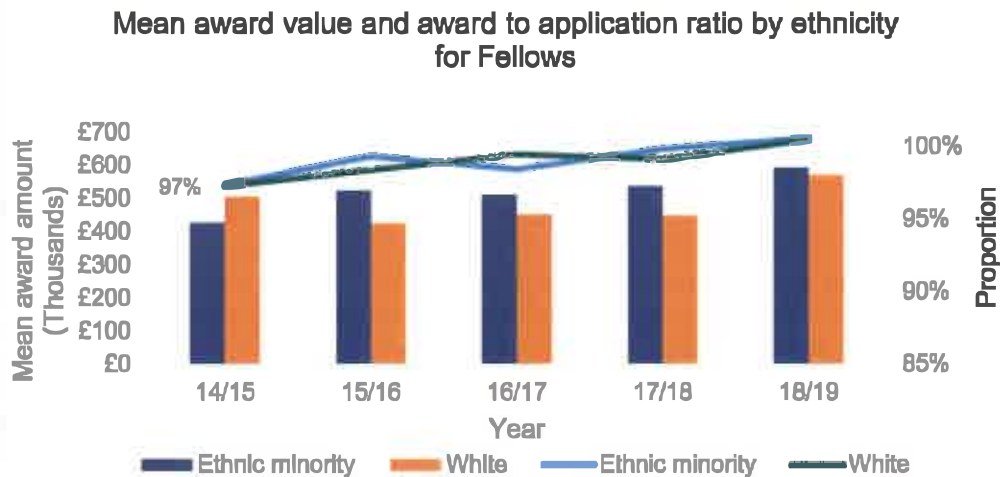
Note: The line graph denotes the award amount as a proportion of amount applied for.

We do not consistently capture, hold or process data that correspond to Questions 3c and 3d. In terms of Question 3c, across UKRI, Expression of Interest stages are not managed in a uniform system and the current quality of record keeping varies by Council. Outline stage applications are captured in our system but are not linked to subsequently submitted grant proposals. Work has been done in the past to try and join these processes up, but this remains a challenge.

Regarding 3d, UKRI Councils classify grants in different ways, using various levels of granularity.

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Factors to consider when interpreting this data

1. We have presented results for UKRI overall and have not broken them down by Council. There is considerable variation amongst the 7 Research Councils in proportion of applicants, awardees, success rates and award amounts. Information by individual Councils will be published in November 2019.
2. These results show while outcomes such as success rate and particular demographic characteristic are related in these descriptive statistics, in order to isolate what is driving these relationships, more sophisticated analysis such as logistic regression will isolate particular drivers of the relationships identified. However, it is clear that there are complex dynamics at play, including asking for less being associated with getting less.
3. Further details on sensitivity analysis is contained in Annex A.

Q4: For all funding agencies, in terms of the collection of detailed data regarding protected characteristics:

a. What data are published regularly, and with what frequency?

Until 2018, the seven Research Councils within UKRI annually published their Council-specific diversity data. This dataset covered four protected characteristics across a range of roles and funding types: the ethnicity, age, gender and disability status of principal investigators, co-investigators, postgraduates holding studentships and those in receipt of fellowships. The last release of this data was in April 2018[11].

Since the creation of UKRI, we have worked to harmonise across this dispersed dataset in order to investigate patterns, recognise trends, prioritise actions and improve our understanding of the impact of our role as a public funder of research and innovation. We have worked to improve our data collecting abilities and our analytical capabilities and will now publish diversity data for the four characteristics, noted above, on our website later in Autumn 2019. This publication will cover the financial years 2014/15-2018/19. Beginning next year, we will return to producing an annual report.

We also produce our Gender Pay Gap Report. Our reports can be found here:
https://www.ukri.org/news/research-councils-and-innovate-uk-publish-gender-pay-reports/

b. What are the barriers to collecting detailed data?

Barriers to collecting data and being confident in the accuracy of the information gathered can include:

- *A reliance upon applicants self-disclosing their personal information or having knowledge of the personal information of their team*. Self-disclosure remains a consistent challenge that is not overcome merely by trying to entice individuals to disclose their information. What may impel someone to disclose information about themselves to one organisation may elicit a negative response in another context, producing a dataset that has uneven rates (for example, if someone chooses not to disclose their disability to one organisation, but will to another).

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[11] https://www.ukri.org/files/rcuk-diversity-headline-narratives-april2017-pdf/ - Results for disability were only provided for student starts, due to small sample sizes for other categories. Also, a large number chose not to disclose their disability status

- *Having expanded, consistent and synchronised data collection capabilities.* Since coming together as UKRI, we have reviewed our data collection systems and analytical capabilities. That assessment indicated that we need to invest in new systems to enhance our data capture and further refine our processes for filtering and acting on the information we hold. We are currently developing new ways to gather integrated information and new systems for sharing that information across the organisation. This is a complex project, but we are taking the necessary steps to roll out a robust and trusted system.

- *Balancing a need for more information with the responsibility of ethically handling sensitive personal information and complying with legal frameworks.* Our data collection policies follow data protocols, guidance on handling sensitive information and our legal obligations and requirements as stipulated within the legal framework of the General Data Protection Regulation (GDPR). We take seriously our responsibility to ask and act on sensitive information in a trusted manner – including when to solicit information and in what form. We are reviewing our collection processes as part of the above-mentioned work and plan to review our data collection protocols on a yearly basis to make sure that they reflect information that we need and that we act on the information provided.

c. What are the barriers to releasing detailed data?

Releasing detailed data comes with risks that need mitigating; some of these, such as the sensitivity of the information, have been expressed in previous answers. One risk and barrier that we have not previously discussed is the issue of low reporting numbers. For example, there are low numbers of self-reporting disability applicants across our dataset. There is a concern that such low figures might enable applicants to be identified. In these and other instances, we may need to minimise such risks of disclosure through data suppression.

There are additional risks of releasing raw data or descriptors without further analysis. This may limit or enable us to miss important drivers of that data, prompting an interpretation that no action is needed. In some instances, releasing information without context may discourage certain groups from applying.

d. What are the barriers to analysing this data year-on-year?

Data can be analysed on a year on year basis however we may need to understand our data beyond what could be incremental yearly fluctuations. We will use our annual data gathering and greater analytical capacity to develop long-range analyses of trends and patterns. Our aim is to track and assess initiatives, interventions and programmes. In addition to the need for long-term analyses, there are additional barriers that include low numbers of people with disclosed characteristics across Councils and missing information. We are addressing both through better data analysis and collection capabilities.

Q5: For cases where diversity data is regularly analysed, if disparities in the award of funding between people with different protected characteristics are found, how do funding agencies address them:

a. What formal policies are in place to act on such disparities?

Collectively, UKRI has set out high-level principles for EDI. As a funder, we have also established clear expectations of those we fund through our terms and conditions.

With the establishment of the External Advisory Group and the appointment of Professor Jennifer Rubin as Executive Champion of EDI, UKRI is now in the position to establish and coordinate an overarching strategy that allows the nine bodies within UKRI to work with one strategic voice as they also address disparities or challenges within their respective communities.
Current UKRI-wide policies include:

- An ambition for each Council to have no wider than a 60/40 gender split.
- Achieving appropriate minimum (30%) published targets for the under-represented gender on all advisory and peer review bodies and referee pools across the Councils, including the representation of REF panel members.
- Policy statements about maternity, paternity, shared parental and adoption leave, grant extensions and alternative participation options related to funding and participation in peer review.

b.   Where are these policies published?
Details of the various policies published can be found both on the UKRI website.

www.ukri.org/about-us/policies-and-standards/equality-diversity-and-inclusion/

www.ukri.org/files/funding/ukri-fec-grant-terms-and-conditions-jun19-pdf/

www.ukri.org/files/funding/ukri-training-grant-terms-and-conditions-jun19-pdf/

www.ukri.org/funding/information-for-award-holders/post-award-guidance/

c.   What evidence is there that these policies are effective in increasing diversity?
In line with the ambitions stated by the Executive Champion for EDI, Professor Jennifer Rubin, UKRI is taking an evidence-based approach. We are building the necessary systems, tools and policies that will enable us to evaluate and assess 'what works' and adjust, modify or stop engaging in policies (where appropriate) that are not effective.

For example, the findings from our evidence reviews (to be published later in Autumn 2019) make clear that evaluation and measurement of EDI actions is something that needs further resourcing and emphasis across all sectors. To that end, UKRI will be implementing a robust evaluation process that will see us trial and experiment (where needed) and monitor impact. We believe that this will benefit our work and the work of other funders and public bodies in producing evidence informed interventions. We will be launching this workstream during Year 1 of our 5-year EDI programme and will assess our actions, every year. This assessment will also include informal stakeholder and community engagement.

With greater analysis of our diversity data, we will be able to highlight trends and patterns. This will allow us to go beyond descriptions and understand the impact of proactive measures and any system changes.

d. **How are action plans arising from these formal policies put in place, implemented and subsequently monitored?**

Professor Jennifer Rubin provides overall strategic oversight and leadership of EDI within UKRI. Professor Rubin works closely with Dr Karen Salt (the Deputy Director of Culture and Environment, mentioned previously) and a permanent EDI team. The EDI team is complemented by a Research Culture Team within UKRI that is steered by a Head of Research Culture. Both groups work within the wider Culture and Environment unit supported and guided by Dr Salt. Both teams also have Prof Rubin as their senior responsible officer.

Professor Rubin reports directly on issues and progress related to EDI to the Chief Executive and to the UKRI Board. As noted above, Professor Rubin has also been working closely with the EDI External Advisory Group (EAG) and internal UKRI teams (including Councils) to give strategic direction and develop a coordinated programme of work.

With the creation of UKRI, we have the opportunity to create policies that involve the whole of UKRI, including our institutes and centres. Following a period of recruitment and development, we are in the process of finalising governance and reporting structures that will allow us to monitor, cascade, investigate and transform our systems in a more agile way. This should be in place in the early quarter of our Year 1 work.

Each council also has internal governance arrangements for reporting on EDI progress, which typically involves presenting information to the senior leadership team and the Council.

In addition to our internal work, there is also external challenge and monitoring by our cross-sector partners and stakeholders. Professor Rubin and the EDI team work closely with external partners, including other funders, BEIS and other government departments to drive progress and change.

Q6: If funding processes include stages that occur before a formal application is submitted for consideration, how are these processes managed/supported and evaluated by the funding agency, in terms of equality, diversity, inclusion and accessibility?

As noted in previous answers, the funding processes within UKRI reflect the distinctive research and innovation opportunities (such as working directly with industry partners) and requirements of specific schemes. This can include preparatory stages which are not formally part of the allocation process. For example, UKRI may host workshops or events to gather feedback on the design of a funding call or to encourage participation in the creation or support of research teams. We may also run activities more formally as part of the allocation process, such as the use of 'sandpits' which are interactive workshops intended to generate potential project proposals for future funding or mentoring schemes.

While we currently have limited information about how such approaches are systematically managed and evaluated in terms of EDI, many of these preparatory stages are explicitly linked to supporting a wider range of applications. For example, EPSRC Regional Meetings actively encourage researchers to attend who do not traditionally engage with EPSRC, recognising some students with disadvantaged backgrounds tend to study in less research-intensive institutions.

We are currently in the process of working with our EAG to evaluate our events and activities associated with some of these preparatory stages to consider how best to monitor, assess and encourage wider participation – and also to evaluate the accessibility of these events for those with various protected characteristics, including those with a self-disclosed or hidden disability. We will announce any guidance or changes to our processes by Year 2 of our programme.

Q7: For members of any underrepresented groups applying for funding:

a. What support is offered pre-award, in particular for those who qualify as under-represented?
b. How are grants advertised? Is any marketing targeted at specific groups?

UKRI Councils use several routes to support under-represented groups in the process of applying, for example:

- Developing close relationships with universities and other research organisations to actively encourage them to support diverse researchers/research teams in applications.
- Communicating opportunities through active campaigns.
- Running workshops and events prior to the application process to encourage participation and situating these across the UK, including in Wales, Scotland and Northern Ireland.
- Providing detailed guidance for applicants, mentors and researcher development teams to encourage applications from those who might otherwise not consider applying.
- Cascading information to research organisations, learned societies and other stakeholders who then can pass on information to prospective applicants.
- Offering research and innovation leadership through centralised roles with the responsibility to convene workshops and build capacity around specific themes.

It is important to note that while some pre-application processes occur within higher education institutions, independent research organisations and funded industry partners, we still take an active interest in the diversification of our applicant pool.

Q8: In the evaluation of funding applications:

a. How are the scores awarded by reviewers in the evaluation of grant applications influenced by particular protected characteristics?

As reviewers provide one score to cover a range of areas of assessment, multivariate analysis or similar techniques with large scale datasets would be required to identify whether there is an effect, and large-scale data are not currently available.

As mentioned previously, we are reviewing how best to reflect the diversity of our communities. There will be more systematic collection under the new funding service system. Where protected characteristics can be attributed to applicants, we note their application and success rates as a group.

b. What steps are taken to minimise both conscious and unconscious bias in those evaluating applications?

All Councils seek to increase the diversity of those involved in their evaluation and assessment processes – including the diversity of disciplines, perspectives, ideas and location of the participants and teams. Individually and through UKRI processes, the Councils provide training and guidance to support those involved in these stages which includes specific training on the ways that stereotypes, framings of excellence and assumptions about different types of people can negatively influence decision-making. This information also includes specific guidance on understanding and supporting the needs of specific groups (such as returners to work or those returning to research and innovation after a career break).

Across UKRI, applications are assessed through a range of mechanisms (e.g. scoring by peer and expert reviewers, panels which consider scores and rank proposals, moderation panel and face-to-face interviews with panel members). UKRI is currently in the process of assessing our expert review processes and will be embarking on a significant programme of work that will see us piloting, assessing and reforming our systems in order to reduce bureaucracy in the application process, enhance the quality of assessment and increase the diversity of applicants.

With the creation of UKRI, we can now evaluate and assess our Council approaches to fairness with the ultimate goal of producing a single policy on managing and minimising bias – including the use of diversity training. It should be noted that evidence on the effectiveness of unconscious bias training is contested, suggesting that while helpful in raising awareness, it is not sufficient by itself to change behaviours or mitigate the impacts of bias and in some cases may actually exacerbate the effects of bias.

Based on this evidence, we are reviewing our guidance on unconscious bias training and plan to announce our recommendations in Year 1 of our programme of EDI work.

c. What steps are taken to encourage best practice?

All Councils have committed to supporting EDI within their overarching strategic delivery plans and will play a key role in implementing UKRI's vision, aims and objectives in EDI. Formal governance processes are being confirmed that will allow UKRI to pilot, test, assess, evaluate, monitor and scale up Council-specific activities that could benefit the research and innovation community.

Examples of scalable actions include:

- Establishing and seeking advice from specialist external advisory groups on EDI.
- Consulting with sector groups and specialist groups.
- Drawing on international practice and benchmarks – for example the Global Research Council principles.
- Sharing learning and what works between Councils through internal groups.
- Drawing on specialist expertise within UKRI, for example from EDI strategy team specialists to support the effective implementation of interventions.
- Working with external stakeholders to review all stages of the evaluation process and implementing recommendations.

- Systematic monitoring and evaluation of methods to develop calls and policies.
- Engaging with communities and working with them to identify challenges, make further improvements and hold Councils to account.

UKRI is now able to leverage this work to improve practice, scale up effective and robust approaches across the Councils and crucially speak with one voice with funding partners to effect change. Our recently commissioned evidence reviews on EDI practices within research and innovation both in the UK and internationally highlight that there is a paucity of evidence on what works and a limited assessment of interventions beyond gender. In this context, it is challenging for organisations to draw on best practice as little is currently rigorously assessed, evaluated and published with accompanying data. UKRI will use its unique role to work across sectors to fill this gap in knowledge and drive change.

d. Is there evidence that current evaluation processes create systems-based bias and disadvantage in the evaluation of funding applications?

We do not currently know if our evaluation process causes disparities in the levels of funding awarded to different groups. The most systematic literature review highlights that wider evidence is conflicting; although there is some evidence to substantiate 'cronyism'.[12]

There are gaps in our data that make it difficult for UKRI to investigate our evaluation system for systematic biases or disadvantage. Making any causal link would require large scale multivariate regression analysis or similar types of statistical methods.

Nevertheless, we recognise that within a process of expert review and assessments relying on human judgement and expertise, there is scope for us to do more to investigate if biases do exist and what can be done to address these, and we have already begun work on this.

While reviewers contribute to the assessment of applications, they do not make funding decisions. Reviewers must be independent and impartial to act as an expert reviewer. Conflicts of interest must be declared, identified and managed. This means that if peer reviewers are approached and have a conflict, they must declare such interests and decline to review. Where conflicts of interests are identified after a review has been submitted, the review is excluded as unusable.

In some Councils, reviewers are recruited initially to a peer review college, and will have been asked to complete additional information to assess their suitability. Most colleges have a code of conduct (e.g. https://esrc.ukri.org/files/funding/guidance-for-peer-reviewers/peer-review-college-code-of-practice-for-reviewers/).

e. What approaches are used to ensure that evaluation of funding is transparent?

As noted above, we are building a unified approach across the organisation. Current approaches to maximise transparency include:

- Publishing all guidance provided to reviewers and panels

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[12] (RAND, 2018 https://www.rand.org/pubs/research_reports/RR1822.html)

- Providing information about panels and their membership including to applicants during the process
- Providing peer reviews to applicants and providing an opportunity for investigators to respond to peer reviewer comments

f. **How are evaluation processes assessed and improved, in the light of international best practice and evidence-based policy development?**

See question on best practice 8C above.

Q9: What policies do funding agencies have in place to address complaints about discrimination on the basis of protected characteristics in the evaluation process? a. If such policies exist, where are they published and are they accessible to applicants?

UKRI has a published complaints policy which can be used to make complaints about discrimination within the evaluation process including by applicants. However, it is important to note that the complaints process deals with failure to follow agreed processes and is not about the outcome of funding awards. Further information about this is available on our website.

https://www.ukri.org/about-us/policies-and-standards/complaints-policy/

The process is not currently available in multiple formats. UKRI is currently reviewing its complaints processes which relate to EDI concerns, including providing access to our information in alternative formats, such as Braille. This work should be complete by Year 1 and may include an update to our processes.

UKRI also has a published whistleblowing policy, which can be used by employees of UKRI should they have concerns about discrimination within internal processes that cannot be resolved through other routes. This policy is available here:

https://www.ukri.org/about-us/policies-and-standards/whistleblowing-policy/

Where individuals have complaints about discrimination in relation to their own institutions it should be noted however that UKRI is **not** listed under the prescribed people and bodies to whom public interest disclosures may be made.

This means that currently UKRI is not legally empowered to respond or intervene, should a member of the public or an employee of a research organisation funded by UKRI have a concern about discrimination relating to activities funded by UKRI. Should an individual raise a whistleblowing case with us they would not currently be afforded any legal protection against action taken against them, for example by their employer.

In supporting the fairness of funding awards (and avoiding discrimination), universities, research organisations and businesses themselves have a key role to play as they act as 'gatekeepers' for which applications are put forward to UKRI. Individuals who wish to make complaints about treatment by their institution are directed towards their employers' own complaints process or must consider legal recourse.

Other than students, who may approach the Office of the Independent Adjudicator, there is currently no regulator or ombudsman with responsibility for investigating or resolving such issues.

Finally, I welcome this inquiry from the committee and look forward to engaging with it fully. I hope the answers provided above will be useful in helping to shape your inquiry.

As stated above, we would be happy to come in and speak to the Committee or provide any further information or clarifications on the above.

Yours Sincerely

Sir Mark Walport

Annex A

Sensitivity analysis

Each characteristic has missing data and variability in number of observations between protected groups and their counterparts which could affect the conclusions. We can use sensitivity tests to address this. This approach creates two estimates for each success rate for the binary characteristics (disability, gender and ethnicity, it does not work for age).

The estimates calculate success rates assuming the unknown values are either one or the other categories, giving us the maximum possible effect the missing data could have on the success rate. For example, an estimate of the success rate for men if all PIs with an unknown gender were male, and again if all unknown PIs were female.

Where the sensitivity boundaries overlap between the two groups, we cannot be confident of the differences between the two groups, given our population size and missing data. Examples of this are given in Figures 1-3.
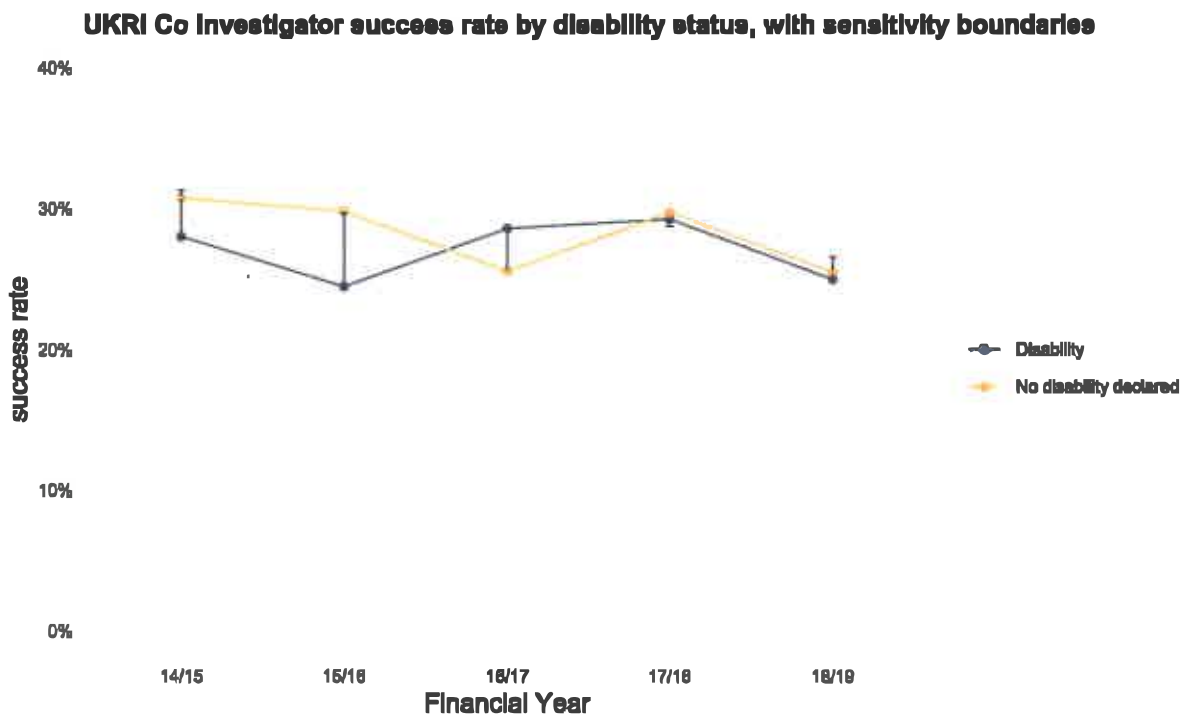
Figure 16

UKRI Co Investigator success rate by disability status, with sensitivity boundaries

Figure 17

UKRI Principal Investigator success rate by ethnicity, with sensitivity boundaries

Figure 18

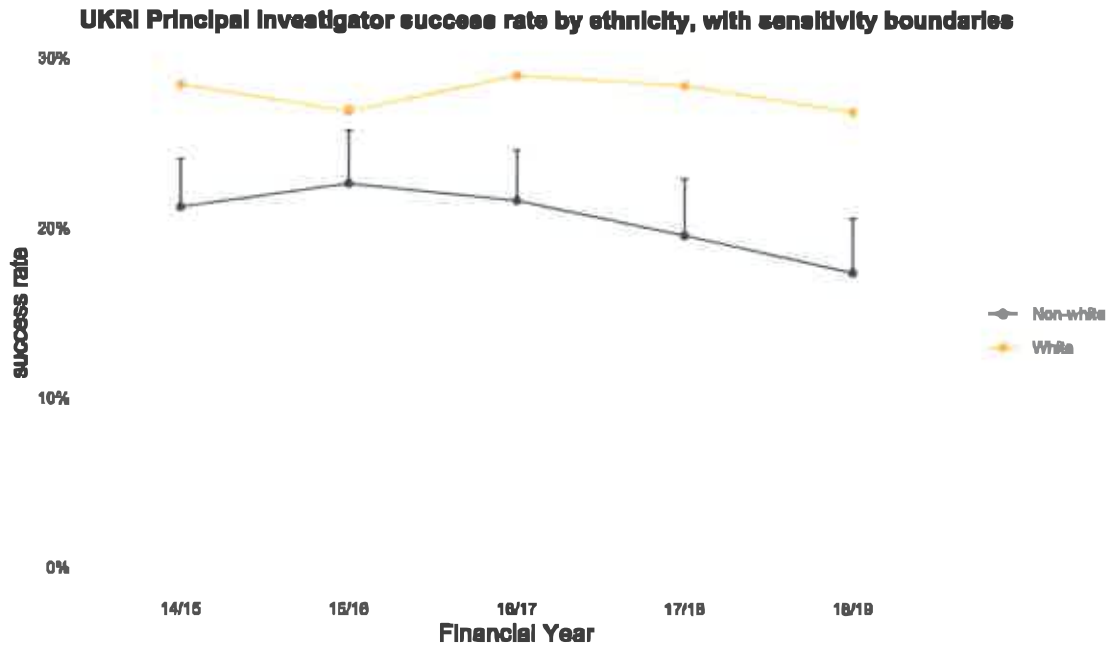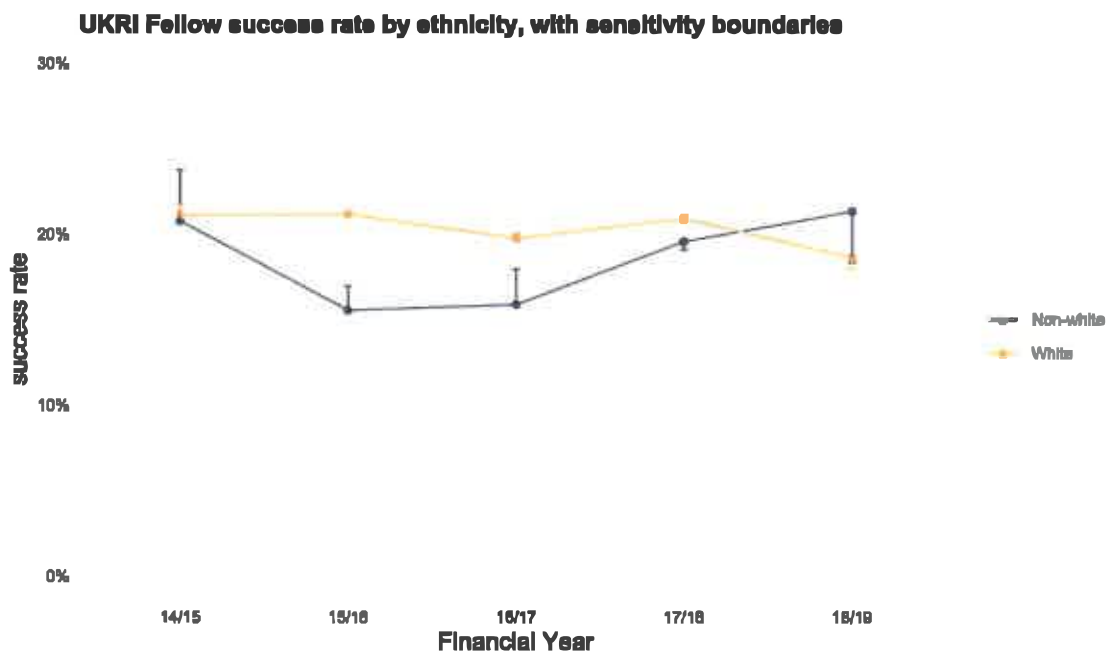**UKRI Fellow success rate by ethnicity, with sensitivity boundaries**

Permutation tests

We can also address the question of whether the differences in success rates seen are significant, in the traditional sense, using permutation tests. A permutation test answers the question 'how likely is it that an effect (in this case a success rate difference) at least as large as this would be seen if the characteristic in question in fact had no effect on the outcome?' It does this by randomly assigning labels (F/M, non-white/white, disability/no disability declared) to individuals and calculating the size of the success rate difference for each randomisation.

It repeats this process multiple times, in this case 1000 times. By comparing the actual difference with the distribution of differences seen in the randomised calculations we get a p value. If the p value is less than the chosen significance level of 0.05, then the difference is considered unlikely to be the result of chance at that significance level. The results of these tests can be found in Table 1.

Table 1[13]

EDI characteristic	Person category	Characteristic category	P value	Rate difference
Gender	PI	main	0	-2.7
Gender	PI	F	0	-2.7
Gender	PI	M	0	-2.7
Gender	Fellow	main	0	5.7
Gender	Fellow	F	0	5.4
Gender	Fellow	M	0	5.8
Gender	Co-I	main	0	-1.9
Gender	Co-I	F	0	-1.8
Gender	Co-I	M	0	-2
Ethnicity	PI	main	0	7.5
Ethnicity	PI	white	0	7.5
Ethnicity	PI	not white	0	4.3
Ethnicity	Fellow	main	0.18	1.6
Ethnicity	Fellow	white	0.2	1.5
Ethnicity	Fellow	not white	0.24	1.2
Ethnicity	Co-I	main	0	4.7
Ethnicity	Co-I	white	0	4.7
Ethnicity	Co-I	not white	0	3
Disability	PI	main	0.02	4.2
Disability	PI	disability	0.4	0.7

[13] 'Characteristic category' indicates the outcome based on the assumption that all 'unknown' investigators' characteristic is in fact in one category or the other (sensitivity analysis.) 'Main' is the actual result excluding investigators with a characteristic which is 'unknown'. Rate differences are F-M, white – non-white and disability – no disability declared.

Disability	PI	no disability	0.03	4.2
Disability	Fellow	main	0.45	-3
Disability	Fellow	disability	0.03	-3.8
Disability	Fellow	no disability	0.53	-2.7
Disability	Co-I	main	0.49	0.9
Disability	Co-I	disability	0.73	-0.2
Disability	Co-I	no disability	0.49	0.9

In summary, the permutation tests find that female PIs and Co-Is tend to have lower success rates than those of male applicants, and the differences in success rates by gender for PIs and Co-Is are very unlikely to be the results of chance. But for Fellows the difference is in the opposite direction, with female applicants having the higher rate and the difference is significant. The sensitivity analysis indicates an insensitivity to uncertainties in the data, with the results being unchanged when we assume either that all 'Unknown' investigators are female or male.

For ethnicity, the results are almost as clear: the success rates differ for PIs and Co-Is, with non-white applicants (as defined in the data) having lower rates in those categories and irrespective of assumptions about the missing data. The differences seen for Fellows by ethnicity are not significant in the traditional sense and are sensitive to the data.

For disability status, Co-I and Fellow differences are not significant, but that for PIs is. However, all figures are highly sensitive to the effects of 'unknown' data and it is probably not a good idea to take any of them at face value.