BARRIERS
TO DOCTORAL
EDUCATION

Equality, Diversity and Inclusion for Postgraduate
Research Students at UCL

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Contents

EXECUTIVE SUMMARY

UCL has done sustained work to improve diversity among undergraduate students, yet this issue has received less attention at postgraduate level. Numbers of Black, Asian, and minority ethnic (BAME) students, women in STEMM, and students with disabilities are increasing at the level of Undergraduate (UG) and Postgraduate Taught study (PGT), but the rate of progress is not yet reflected in the Postgraduate Research community (PGR).

In particular:

- UK-domiciled BAME students, and Black British students in particular, are consistently and considerably under-represented;

- Academic career progression for women does not reflect the numbers of women trained at doctoral level;

- Students with disabilities experience persistent challenges to inclusive participation;

- The mental health of postgraduate researchers has become an area of growing concern.

This report collates recent research to identify significant structural barriers to accessing and participating in doctoral education. These barriers may be experienced by any student considering a PhD or currently working on postgraduate research, but they are experienced disproportionately and sometimes cumulatively by students who identify under protected characteristics, including those from non-traditional and disadvantaged backgrounds.

Financial factors, which restrict students' educational choices, present one of the most challenging obstacles to accessing doctoral education, but there are also non-financial factors which have an important influence on progression to, and completion of, a PhD. These include the undergraduate awarding gap as a disqualifier, availability of knowledge about the research environment and awareness of potential career paths, visible lack of role models, access to mentorship, inclusive and equitable treatment, connection to community, and sufficient and appropriate support mechanisms and resources.

As a sector leader in Equality, Diversity and Inclusion (EDI), UCL has the experience, expertise, and commitment to overcome many of the persistent structural and cultural barriers encountered by prospective and current PGR students. Some of the recommendations proposed in this report have been discussed and developed in collaboration with UCL's Office of Equality, Diversity and Inclusion and other university stakeholders, including PGR students. Other recommendations are informed by examples of best practice across the sector: initiatives that have been operationalised at universities in the United States, piloted at other UK universities, or proposed by research funding organisations.

The relevance of these recommendations is heightened by the current Covid-19 pandemic, which is exacerbating structural inequalities for different groups within the postgraduate research community at UCL, including BAME students, students with caring responsibilities, students from low socio-economic backgrounds, and students with disabilities or health conditions. Acknowledging and acting on unequal impact now will help the University to mitigate some of the negative effects in the longer term. These concerns are also particularly pertinent in the context of Black Lives Matter, as the university prioritises its work to advance diversity and inclusion and as it acts on its commitments to dismantling institutional racism.

This report contains a high number of recommendations, listed in full overleaf. It is recognised that UCL may not be able to implement all of these and will need to prioritise those measures that are most likely to drive effective, sustainable structural change.

> "Financial factors, which restrict students' educational choices, present one of the most challenging obstacles to accessing doctoral education, but there are also non-financial factors which have an important influence on progression to, and completion of, a PhD."

RECOMMENDATIONS

Academic Barriers	Recommendations
Attainment: • Awarding gap and over-representation of PhD candidates from Russell Group institutions **Application:** • Lack of consistent, transparent PGR application process and admissions data	(i) Extend the UCL Access and Widening Participation agenda and workstreams to PGR recruitment and student support;
	(ii) Commission research study into current PhD student journey from secondary to PGT level;
	(iii) Design a contextual PGR admissions process with an equity selection process built into decision-making;
	(iv) Require an EDI assessment for all PGR admissions and funding award panels;
	(v) Require targeted PGR EDI training for all members of PGR admissions and funding award panels;
	(vi) Propose a single application portal for PGR admissions (e.g. UCL Select) to enable collection of EDI data, facilitate transparent processes, and provide accessible data analysis;
	(vii) Introduce Equality Impact Assessment for PGR programmes that consistently fail to meet their own EDI targets;
	(viii) Establish a Postgraduate Diversity Advisory Council to promote and support PGR recruitment and retention.

Financial Barriers	Recommendations
Investment: • Accrued loan debt for self-funded students from disadvantaged backgrounds **Funding:** • Financial need of disadvantaged and under-represented students; • Impact of awarding gap on competition for funded PhD positions; • Lack of transparency in funding decisions.	(i) Provide one-year needs-based fully funded studentships or fee waivers at PGT and MRes level to under-represented/ disadvantaged students who enrol for 1+3; (ii) Create an enhanced reporting mechanism for CDTs and DTPs to evaluate effects of funding decisions on the diversity of the cohort; (iii) Collect data on socio-economic characteristics for all PhD programmes; (iv) Fundraise to increase the number of UCL-ROS places and consider other dedicated financial assistance programmes for disadvantaged populations; (v) Analyse the distribution of funded doctoral opportunities across UCL; (vi) Identify a percentage of research council funded places to be awarded to disadvantaged and/or under-represented students within the cohort; (vii) Require EDI reflection at department level for PhD funding decisions; (viii) Consider EDI Research Enrichment awards.

Career Barriers	Recommendations
Representation: • Lack of BAME role models • Lack of Black role models • Lack of women role models in STEMM **Guidance:** • Academic career preparation • Early awareness of careers beyond academia **Culture shift:** • The framing of the PhD as an academic apprenticeship	(i) Require contribution to diversity and inclusion criteria for academic staff appointments;
	(ii) Adjust the professorial promotion criteria to recognise the way in which candidates support colleagues to succeed;
	(iii) Specialised academic career mentoring and advocacy schemes for under-represented communities, including BAME PGR students and female PGR students in STEMM fields;
	(iv) Early and reiterative advice and information about careers beyond academia;
	(v) Develop training resources for supervisors, DGTs, and PGR administrators to provide structured support to engage in career development interviews with doctoral students.

Knowledge Barriers	Recommendations
Information: • Lack of knowledge about PhD and ability to make informed decisions. • Inequity in how opportunities are communicated. • Lack of targeted advice or mentoring for talented/motivated students from under-represented backgrounds **Experience:** • Lack of research experience that affects likelihood of application, chances of successful application, and self-confidence	(i) Provide targeted early outreach and intervention programme;
	(ii) Train PGR ambassadors for a PhD information and mentoring programme;
	(iii) Offer application training workshops for under-represented groups;
	(iv) Explore how PhD opportunities are communicated and how current PhD students learnt about opportunities;
	(v) Work with PGT staff and personal tutors to increase understanding of barriers to PGR;
	(vi) Offer paid research placements for UG/PGT students under-represented in PGR;
	(vii) Explore summer bridging programmes for UG to PGT/PGR;
	(viii) Create a pre-doctoral programme: e.g. undergraduate pipeline fellows programme or talent scholarship scheme;
	(ix) Create a centre for undergraduate research experience.

Research Culture & Wellbeing Barriers	Recommendations
Exclusion: • Non-inclusive and discriminatory experiences **Supervision:** • Lack of awareness of potential EDI barriers to doctoral education • Lack of attention to inclusive learning • Inconsistent pastoral role in supervisory relationship • Identifying mental health difficulties **Community:** • Ensuring inclusive and transparent opportunities for participation, consultation, and representation in governance	(i) Support research funders to require demonstrable progress with Race Equality Charter action plans as a pre-requisite to funding approval;
	(ii) Prompt EDI initiatives that focus on intersectional impact (e.g. female BAME)
	(iii) Promote a campaign for inclusive language and introduce pronouns usage as standard (she/her/hers; he/him/his; they/them/theirs);
	(iv) Recruit a trained disability advisor in each Faculty and embed accessibility (inc. BSL) in planning for conferences and public seminars;
	(v) Recruit ethnically diverse counsellors trained in BAME student needs in Student Psychological and Counselling Services;
	(vi) Offer alternative learning formats as standard and continue provision of UCL's online doctoral skills training, remote upgrade, and remote viva process;
	(vii) Invest in Continuing Professional Development on equalities and inclusion issues for all supervisors and PGR administrators (new and existing). Include an EDI training module about PGR student experience and promote ally and active bystander training, and training on anti-racism, racial microaggressions, white privilege.
	(viii) Encourage PhD supervisor participation in UKCGE's Research Supervision Recognition Programme;
	(ix) Train, support and recognise supervisors' and DGTs' role in identifying and supporting wellbeing issues among postgraduate researchers; provide support mechanisms for staff;
	(x) Include question section about PGR wellbeing in the next PRES (2021).

Communication and Outreach Barriers	Recommendations
Sharing best practice: • Building connection between UCL colleagues working in EDI, PGR, and WP • Outreach to UK and international HEIs • Leading the sector in dismantling the barriers to doctoral education	(i) Facilitate forums for sharing initiatives, good practice, and policies across UCL;
	(ii) Host a national conference on barriers to doctoral education.

1. Postgraduate Research Community at UCL

In the 2019-2020 academic year, UCL's PGR community comprises over 5,900 students and is currently the largest population of doctoral candidates of any HEI in the UK. As a global leader in education and research, UCL is a highly attractive destination for postgraduate study and its academic reputation for high-quality specialist training, PhD funding opportunities, and potential career prospects available for researchers are a draw for both UK-domiciled and international students.

The UCL Research Strategy commits to the creation of a diverse and supportive intellectual community, informed by researchers from all backgrounds and the widest possible talent pool, as the model that can best address the challenges of a global society. Ensuring that the production of knowledge is reflective of current society is fundamental to economic, scientific and social progress (UKCGE, 2019). The lack of equal opportunity for all students to access the benefits of postgraduate research education, regardless of race, ethnicity, social background, gender or disability, has serious long-term consequences for social mobility and the perpetuation of systemic societal divisions and runs counter to the Strategy.

The potential to create a fully diverse and inclusive research community is compromised by well-documented and persistent barriers to access and participation that are experienced, not exclusively, but more acutely, by students from under-represented, non-traditional, and disadvantaged backgrounds. Issues of financial security, confidence in career prospects, and awareness or experience of academic research are all factors that present challenges for most students considering a doctorate. For prospective UK-domiciled students from Black, Asian and Minority Ethnic (BAME) groups, first-generation students, students from low socio-economic backgrounds, women in STEMM fields, students with disabilities, and for many students who identify under protected characteristics (Equality Act 2010), these challenges are compounded by additional obstacles.

A further potential barrier to successful participation in doctoral education has recently been highlighted by reports from the Royal Society and the Wellcome Trust, which have characterised the current working culture across the research sector as problematic. Researchers from PhD level through to academic staff report experiencing a lack of inclusive practice and behaviour, as well as career insecurity and poor mental health. For students whose experience of higher education is already affected by existing challenges, these are additional participatory barriers to success in postgraduate research. They may affect attrition rates, progression to postdoctoral research, and access to academic and research careers. These conditions are likely to have a negative effect on the quality of research being produced.

Creating a sustainable, productive, innovative, and socially-just research culture requires doctoral programmes that not only meet academic metrics of success, but that are characterised by excellent student experience and increasing opportunities for all students at all stages of the postgraduate research journey, from access, through participation, to post-PhD outcomes. The research environment at UCL must ensure that it is diverse and inclusive and that everyone has the opportunity to thrive "regardless of their ethnicity, gender, age, sexuality, disability, social class or other characteristics" (UKRI 2019).

"Researchers from PhD level through to academic staff report experiencing a lack of inclusive practice and behaviour, as well as career insecurity and poor mental health."

1.1 Racial and ethnic diversity of PGR students

UCL's international student recruitment (38% of all PGR enrolments in 2018-19) contributes considerably to the university's cultural, racial and ethnic diversity and there has been growth in the proportions of non-UK BAME students across all postgraduate programmes since 2014, boosted primarily by overseas Chinese student enrolment (UCL Race Equality Charter 2020). The number of UK-domiciled BAME PGR students is also increasing and is somewhat higher than the UK HEI average (Fig. 1), which may reflect several years of substantial EDI activity at UCL and may also be as expected for a major metropolitan university located in the capital, which itself has the country's highest BAME population.

However, postgraduate research at UCL still mirrors a national picture of UK BAME under-representation. BAME undergraduate numbers have risen for the last five years and figures show a corresponding increase in the numbers of BAME students enrolled in postgraduate taught (PGT) programmes (Fig. 2). However, UK BAME students (~16% of all PGR) are far more likely to enter PGT than PGR (Fig. 3)[1] and are less likely to progress from PGT to doctoral programmes than UK-domiciled White students (Arday 2017). HESA data for 2017-18 indicated the percentages of UK BAME students in PGR were lower at UCL than at most of its London counterparts (Fig. 4).

Further, there is significant and persistent under-representation of Black British students in PGR at UCL. Only 2.1% of all PGR students in 2018-19 were Black British, an increase of just 0.4% in the last five years[2] and well below the 3.9% of Black British students studying PGT courses (UCL Race Equality Charter 2020). 3.4% of all UK-domiciled PGR students at UCL were Black, which was also below the national HE average for 2018-19 (Fig. 1).

Figure 1: UCL 2018/19 postgraduate research students

	All UK HE providers[a]	UCL[b]	UK Census figures 2011[d] London	England/Wales
Female	49%	54%		
Male	51%	46%		
Known disability	10%	11%		
No known disability	90%	89%		
UK-Domiciled				
White	82%	73%[c]	60%	86%
BAME	18%	27%	36.8%	13%
Black	4%	3.4%	13.3%	3.3%
Asian	8%	14%	18.5%	7.5%
Mixed	4%	5.6%	5%	2.3%
Other	2%	4.1%	3.4%	1%

[a] HESA, Who's Studying in HE?
[b] UCL, Office for Equality, Diversity and Inclusion
[c] In 2019-20 UCL data, the figures are 71% UK White and 29% UK BAME students
[d] Added with the acknowledgement that the 2011 UK census data is almost a decade old

[1] HESA 2018-19 data for all HEIs records PGT enrolment is double that of PGR enrolment for UK-domiciled Black students. The percentages for both have changed very little over the last 5 years.

[2] The percentage of Black British PGR students at all Russell Group universities has remained at around 2% for the last 5 years (Vaughan & Murugesu 2020).

Figure 2: UCL students by level of study and the proportion of BAME students (purple line) 2014/15-2018/19
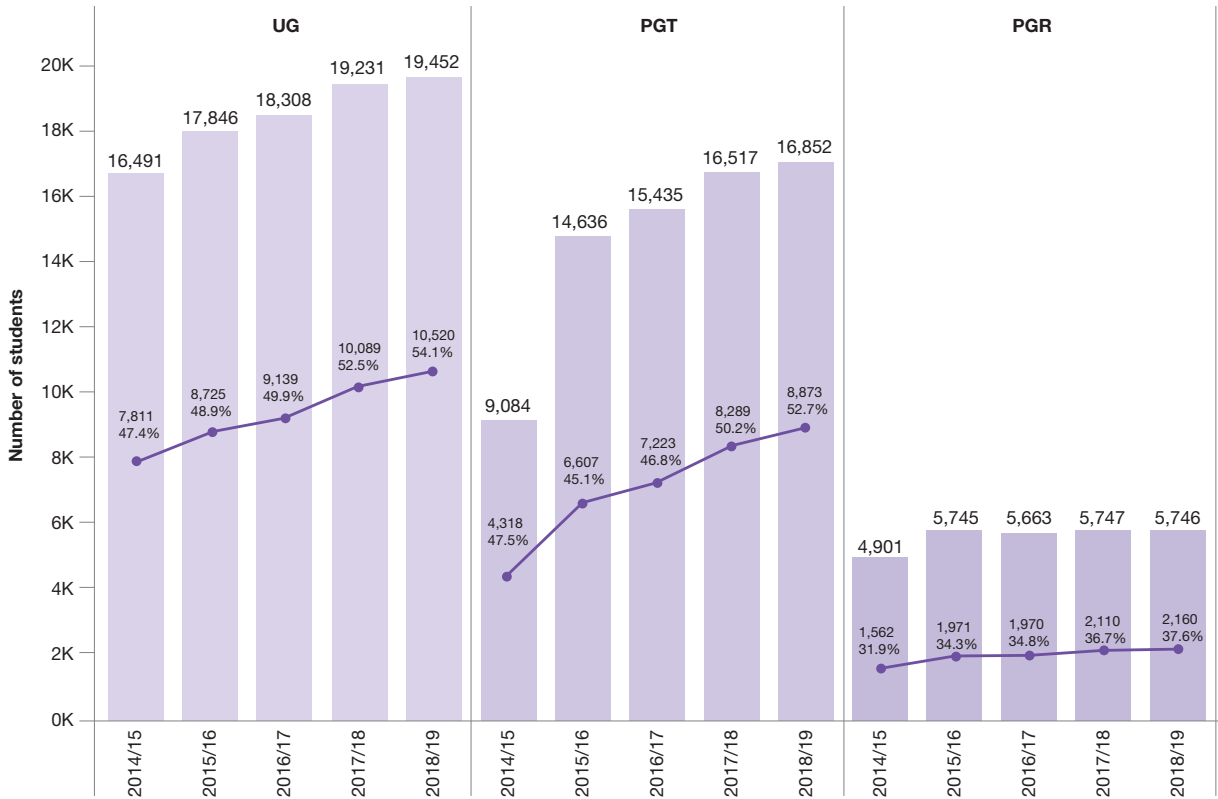
Source: UCL Office for Equality, Diversity and Inclusion

Figure 3: UCL 2018/19 Postgraduate students and the proportion of BAME students (purple line) 2014/15-2018/19

Source: UCL Office for Equality, Diversity and Inclusion

Figure 4: HESA comparison of the ethnicity of UK PGR to the national average, all London universities and all Russell Group universities 2017/18

	UK PGR					
	BAME		White		Unknown	
	Count	*%*	*Count*	*%*	*Count*	*%*
National average	80	18.2%	351	78.9%	17	3.2%
London University	106	27.0%	256	69.2%	13	3.9%
Russell Group	239	15.8%	1,149	80.6%	49	3.5%
UCL	**920**	**26.2%**	**2,500**	**71.4%**	**85**	**2.4%**

	UK PGR					
	BAME		White		Unknown	
	Count	*%*	*Count*	*%*	*Count*	*%*
Imperial College	605	29.0%	1,410	67.3%	80	3.7%
King's College	430	26.6%	1,145	70.8%	40	2.6%
LSE	45	27.3%	115	70.8%	5	1.9%
Queen Mary	145	24.1%	430	71.7%	25	4.2%
UCL	**920**	**26.2%**	**2,500**	**71.4%**	**85**	**2.4%**

Source: UCL Office for Equality, Diversity and Inclusion

The lower numbers of Black students at doctoral level mean that there continues to be few academic staff role models in the University, which contributes to students feeling a lack of belonging in their learning environment (Race Equality Charter Student Survey). Arday et al. (2018) have demonstrated the well-documented links between belonging and academic success (also Cousin & Cureton 2012; Thomas 2012). There is incomplete data available about completion and attrition rates for UCL's PGR degrees, but research in the US has shown that retention, attainment, and destination statistics are all consistently poorer for BAME PhD students (Arday et al. 2018).

The Higher Education Statistics Agency (HESA) reports that almost half of all Black doctoral students are enrolled part time, the largest percentage of part-time PGR students across all ethnic groups (2019) and research by the Leading Routes organization (Williams et al. 2019) has shown part-time students are "generally more likely to also be self-funded" (5). At UCL, 43.5% of UK-domiciled Black PGR students are enrolled part time (compared with 31% of UK-domiciled BAME students and 30% of UK-domiciled White students); 45% of UK-domiciled Black students are self-funded (compared

with 38% of all UK BAME and 30% of UK White students); 31% of UK-domiciled Black students are part-time *and* self-funded (compared with 21% of UK BAME and 17% of UK White students)[3]. Financial security and levels of connection and engagement with the institution have been identified as significant factors for successful participation in doctoral education (OfS 2018; Arday et al. 2018; Williams et al. 2019).

In the most recent Postgraduate Research Experience Survey (PRES) at UCL, which was completed in 2019 by 60% of PGR students, BAME students' overall satisfaction with their research degree experience at UCL was recorded at 80%, which was 3% lower than the Russell Group average. More non-BAME students reported satisfactory experience (82%) and Asian students (UK and non-UK) and those recording their ethnicity as 'Other' appeared to be least satisfied (80% and 77% respectively). Chinese students (UK and non-UK) reported the highest levels of satisfaction with their experience of the research culture at UCL (72%), compared to 66% of White students, 66% of Asian students, 65% of Black students, and 61% of students with ethnicity recorded as Mixed or Other (UCL PRES 2019).

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[3] Source: UCL Student and Registry Services.

1.2 Gender diversity of PGR students

When considering the full range of gender diversity at UCL, it is worth noting that there is currently a lack of consistent data collected about and on behalf of non-binary students enrolled in PGR education, which presents a challenge to any determination about accessibility and inclusion for those who do not identify as female or male. HESA data for 2018-19 records only 0.2% of PGR students in a category designated 'Other'. UCL's PGR admissions database currently records only binary gender identity.

The proportion of female students undertaking historically male-dominated subjects at UCL has increased and is significantly above the national average (UCL Athena SWAN submission 2020). At the level of PGR, the percentage of female students in 2018-19 was 54% (UCL Office for EDI), which is markedly higher than the national average of 49% (HESA 2019a). Female research students are also well represented in many STEMM fields at UCL, with above average percentages in Medical Sciences and Life Sciences, compared to the national averages, and particularly high numbers in Brain Sciences and Population Health Sciences (70% and 63%, respectively, in 2018-2019 intake figures, rising to 72% and 66% for the 2019-20 intake).[4]

Proportions of female PGR students in the Faculty of Engineering Sciences and the Faculty of Mathematical and Physical Sciences are above the sector average for their fields of study, according to HESA's 2018-19 data.[5] However, these numbers have remained below the UCL and national average in the context of all disciplines (28% and 32% respectively in 2018-19 intake figures, rising to 36% and 39% for the 2019-20 intake). In the Faculty of Laws, female PGR enrolment is also low for the last two years' intake (33%), though the faculty enrols relatively few students in PGR programmes (~0.6% of all PGR).

These figures indicate significant progress regarding access to postgraduate research for female students in STEMM disciplines and beyond. In terms of academic career progression, however, UCL data suggests that equal representation, or even over-representation in undergraduate and postgraduate education does not yet translate into equitable representation of women in academic staff positions (Fig. 5).

Figure 5. UCL STEMM academic pipeline by gender 2018/19. Source: UCL Office for Equality, Diversity and Inclusion

Legend: Male (%), Female (%)

UG – Undergraduate
PGT – Postgraduate Taught
PGR – Postgraduate Research
R/TC – Research / Teaching Contracts
L – Lecturers
AP – Associate Professors
P – Professors

FACULTY OF BRAIN SCIENCES

	UG	PGT	PGR	R/TC	L	AP	P
Male	19	21	29	38	46	57	66
Female	81	79	71	62	54	43	34

FACULTY OF THE BUILT ENVIRONMENT

	UG	PGT	PGR	R/TC	L	AP	P
Male	46	44	49	61	61	63	73
Female	54	56	51	39	39	37	27

FACULTY OF ENGINEERING SCIENCES

	UG	PGT	PGR	R/TC	L	AP	P
Male	69	59	67	69	69	75	80
Female	31	41	33	31	31	25	20

FACULTY OF LIFE SCIENCES

	UG	PGT	PGR	R/TC	L	AP	P
Male	33	25	42	47	39	69	77
Female	67	75	58	53	61	31	23

FACULTY OF MATHEMATICAL & PHYSICAL SCIENCES

	UG	PGT	PGR	R/TC	L	AP	P
Male	55	56	69	68	70	79	81
Female	45	44	31	32	30	21	19

FACULTY OF MEDICAL SCIENCES

	UG	PGT	PGR	R/TC	L	AP	P
Male	44	39	44	36	68	61	77
Female	56	61	56	64	32	39	23

FACULTY OF POPULATION HEALTH SCIENCES

	UG	PGT	PGR	R/TC	L	AP	P
Male	28	25	32	30	27	48	55
Female	72	75	68	70	73	53	45

Unknown or withheld data has been included in the calculations, but not the visualisations. Data is from 2018.
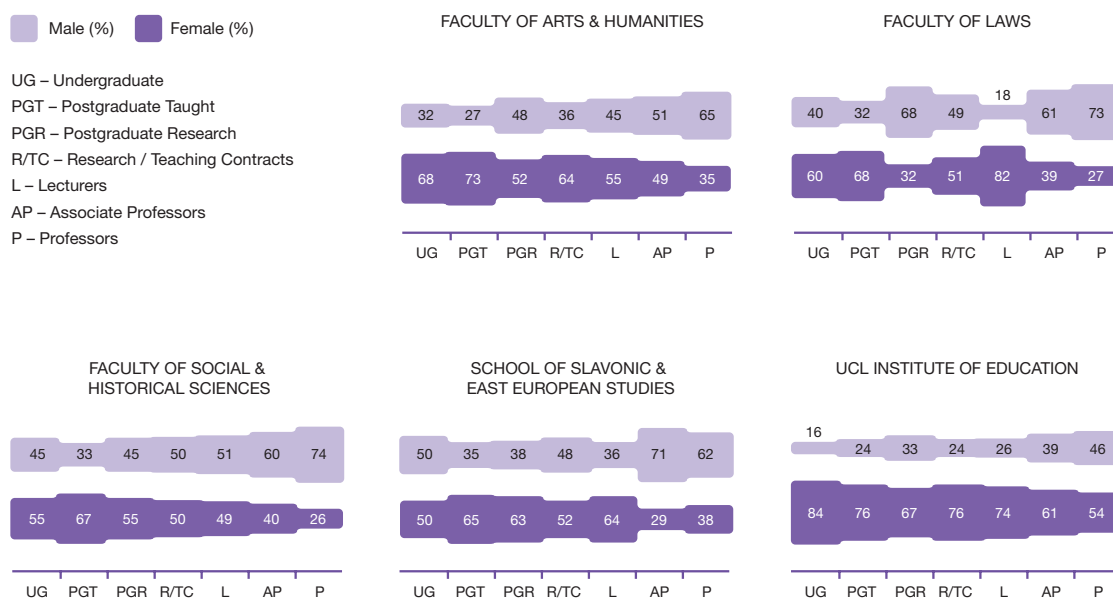
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[4] UCL Faculty Doctoral Planning summaries 2018-19 and 2019-20.

[5] 26% for Engineering, 29% for Mathematical Sciences and 38% for Physical Sciences (HESA 2019a).

UKRI (2019) statistics reveal that this is also the case nationally. Currently, only 51% of female STEMM graduates in the UK progress to STEMM careers, compared to 68% of men. Women account for just 17% of full-time STEMM professionals and, in some disciplines, fewer than 20% of UKRI grant holders are women. Research by LERU (2018) has shown that female researchers "have a stronger sense of career insecurity" and that in academia "as in research careers in general, a significant part of female talent vanishes at successive career stages" (15).[6] As Fig. 6 illustrates, this is not a challenge limited only to STEMM disciplines.

Data related to female PGR student experience at UCL is more challenging to locate and evaluate, though the results of the PRES are instructive. 55% of all survey respondents were female. For all questions related to the categories of supervision, resources and timely completion, female respondents recorded less satisfaction than male respondents; 64% of female respondents indicated satisfaction with their experience of research culture, compared to 70% of male respondents; and 81% of female respondents expressed "overall satisfaction" with the experience of their research degree programme, compared to 84% of male respondents.

Figure 6. UCL non-STEMM academic pipeline by gender 2018/19. Source: UCL Office for Equality, Diversity and Inclusion

Male (%) Female (%)

UG – Undergraduate
PGT – Postgraduate Taught
PGR – Postgraduate Research
R/TC – Research / Teaching Contracts
L – Lecturers
AP – Associate Professors
P – Professors

FACULTY OF ARTS & HUMANITIES

UG	PGT	PGR	R/TC	L	AP	P
32	27	48	36	45	51	65
68	73	52	64	55	49	35

FACULTY OF LAWS

UG	PGT	PGR	R/TC	L	AP	P
40	32	68	49	18	61	73
60	68	32	51	82	39	27

FACULTY OF SOCIAL & HISTORICAL SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
45	33	45	50	51	60	74
55	67	55	50	49	40	26

SCHOOL OF SLAVONIC & EAST EUROPEAN STUDIES

UG	PGT	PGR	R/TC	L	AP	P
50	35	38	48	36	71	62
50	65	63	52	64	29	38

UCL INSTITUTE OF EDUCATION

UG	PGT	PGR	R/TC	L	AP	P
16	24	33	24	26	39	46
84	76	67	76	74	61	54

"In terms of academic career progression, however, UCL data suggests that equal representation, or even over-representation in undergraduate and postgraduate education does not yet translate into equitable representation of women in academic staff positions."

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[6] See also 'She Figures 2018' from the European Commission, 2019.

1.3 Disability disclosure of PGR students

In 2018-19, students with disabilities accounted for 14% of all students in UK HEIs (HESA 2019a). At UCL, the total number of students disclosing one or more disabilities was recorded at 10% and in the 2018-19 postgraduate research student intake, the number was 11%, compared to 10% of PGR students across all HEIs in the UK. At all levels of education, the number of students with a known disability is increasing year on year. The main reason for this increase is students identified as having a mental health condition (HESA 2020a). Research by Levecque et al. (2017) suggests that one in two PhD students will experience mental health difficulties as a result of their studies, while one in three is at risk of depression. According to OfS (2020), student outcomes for those who report disability status include higher attrition rates, lower first-degree results (which affects eligibility for postgraduate study), and lower rates of highly-skilled employment.

In January 2020, the Disabled Students' Network produced a report via UCL Students' Union summarising the results of a student survey. The report notes that 67% of disabled students surveyed stated that they had experienced ableism at UCL and 58% of disabled students stated that they had been made to feel unwelcome at UCL due to their disability.

These findings are supplemented by UCL's PRES 2019 data, which provides more specific information about the experience of disabled postgraduate research students. Of 199 respondents disclosing one or more disabilities (6% of total respondents), 42% disclosed a learning difficulty, 31% disclosed a mental health condition or anxiety disorder, and 16.1% disclosed a long-standing illness. For this group of students, satisfaction with the experience of their research degree was 75%, 7 percentage points below the average for all PGRs at UCL.

1.4 Additional and intersectional diversity factors for PGR students

Statistical data show that race, ethnicity, gender identity (or sex), and disability emerge as key factors shaping access and participation in postgraduate research education. However, PGR inequities are also driven by additional factors that receive less attention in extant research. These include socio-economic background, parental or family history of higher education, sexual orientation, religion, age, caring responsibilities, and care experience. Such considerations may have consequences for financial support and confidence in ability to engage in an advanced degree programme. They may also influence whether a student enrols part-time or participates remotely, which has significance for levels of engagement and community.

The intersectional impacts for students who experience more than one factor of systemic disadvantage, discrimination, or differential need, are even more acute and complex. For example, the Research On Research Institute (Wakeling & Hancock 2019) finds that in the UK, "graduates who are female, of Black African, Black Caribbean, Indian, Pakistani, or Bangladeshi ethnicity, or are from lower socio-economic backgrounds, have low or exceptionally low rates of progression to doctoral level study" (10).

Further, as many forms of disadvantage lack visibility, potential barriers to academic success may be identified and addressed less reliably. For this reason, metrics of diversity must be attended by strategic interventions to improve inclusive experience and equity of opportunities for those who are marginalised or discriminated against in their learning environment (Adegoke 2020). An inclusive research culture, in turn, actively cultivates a positive climate for diversity.

> "At all levels of education, the number of students with a known disability is increasing year on year."

> "The intersectional impacts for students who experience more than one factor of systemic disadvantage, discrimination, or differential need, are even more acute and complex."

2. UCL's commitment to equality, diversity and inclusion

UCL has committed to equality, diversity and inclusion in the full range of its academic and professional practices. This is reflected in its achievements within the frameworks of Athena SWAN, the Race Equality Charter and the Stonewall Workplace Equality Index. It is also evident in the numerous professional and social networks established to offer support and resources to all students and employees who identify under the Equality Act's protected characteristics.[7]

At undergraduate level, significant Widening Participation efforts have resulted in steadily increasing numbers of ethnically diverse students, women studying STEMM, students from disadvantaged backgrounds, and students with disabilities. Over the long term it might be expected that these qualitative successes could gradually generate more diversity in the postgraduate research community.

At the other end of the academic pipeline, the number of women in senior academic leadership positions is increasing and the BMEntor, Inclusive Advocacy, and Stellar HE programmes have been introduced to grow BAME representation in UCL's academic staff and institutional leadership. The visibility of academic role models from traditionally under-represented groups has been cited as a positive factor for progression into postgraduate study and academic careers for BAME students and women in STEMM disciplines.[8,9]

At the level of postgraduate research in particular, UCL has introduced important initiatives to encourage and promote diversity and inclusion:

- The UCL BAME Awarding Gap Project and the sector-leading UCL Research Opportunity Scholarship Programme (UCL-ROS) both target the challenges of postgraduate research enrolment from an access and widening participation perspective. UCL partners with an external charity (the Windsor Fellowship) to select BAME candidates for the UCL-ROS;

- Centres for Doctoral Training and Doctoral Training Programmes (CDTs and DTPs) at UCL are required to report gender, ethnicity, and disability data for their doctoral candidates, as well as proposals and interventions to increase diversity in applications and admitted cohorts;

- Faculty Doctoral Strategies analyse deficits in BAME representation, encouraging accountability at a local level;

- The 'Michael Arthur Scholarship' will fund underrepresented postgraduate students studying at the new Sarah Parker Remond Centre for the Study of Racism and Racialisation;

- UCL sponsors the Leading Routes charity, which aims to improve the representation of Black students at postgraduate level;

- Black in Academia events such as 'Staying the Course' encourage Black students considering a PhD or career in academia;

- Continuing efforts to increase enrolment of female PGR students are reflected in the faculties' Athena SWAN action plans.

At the faculty level, there are additional strategic plans and initiatives. Examples include:

- The Bartlett runs a pre-doctoral application course for Asian female scholars and features PGR UK BAME intake as part of the Bartlett Promise funding programme;

- Medical Sciences has a dedicated Faculty Lead focusing on BAME PhD student representation and experience;

- Social & Historical Sciences are focusing on BAME PhD students as a priority through outreach and securing funding for studentships;

- Laws are funding a dedicated scholarship for BAME PhD students based on the UCL-ROS model and the UCL Institute of Education have discussed doing the same.

Additional actions are likely to be organised at a departmental level, but these are not always as visible to a broad audience across the University. Coordinating communications and creating clear opportunities for sharing best practice could stimulate further efforts to advance the institution's EDI goals for the PGR community (Section 4).

While UCL has engaged in a broad variety of ways and for a long period of time to ensure that disadvantaged and underrepresented students – and staff – are supported to succeed, the rate of change is slow and more work is clearly required. This is particularly true in areas of the university, like PGR diversity and inclusion, which have received less attention to date. The reasons why students may be deterred from, or experience limited access to, doctoral education are complex and manifold and there are opportunities for UCL to introduce and facilitate additional strategic interventions which address the structural barriers that hinder the success of marginalised groups.

This report collates a range of sources, from regulators, funding bodies, higher education institutions, grassroots organizations, and the media, to consider barriers to postgraduate research. The key barriers to access, success, and progression for under-represented and disadvantaged students are identified in the following categories:

- Academic

- Financial

- Career

- Knowledge

- Research culture and wellbeing

Each category concludes with recommendations for actions that could accelerate progress in widening access, addressing bias, dismantling obstacles, and improving student experience.

> "The reasons why students may be deterred from, or experience limited access to, doctoral education are complex and manifold and there are opportunities for UCL to introduce and facilitate additional strategic interventions which address the structural barriers that hinder the success of marginalised groups."

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[7] https://www.ucl.ac.uk/equality-diversity-inclusion/equality-diversity-inclusion-committees-and-networks
[8] Advance HE (2018). "Does diversity of staff impact student outcomes in higher education?"
[9] UCL (2014) 'Why isn't my professor black?' *UCL panel discussion*. University College London.

3. Barriers to equality, diversity and inclusion

3.1 Academic barriers

The education system, beginning from the early years, does not serve all students equally. The persistence of racism and discrimination, as well as the unbalanced allocation of resources and opportunities in British schools, perpetuates class distinctions and facilitates academic achievement deficits for many young people from low-income backgrounds and from racialised minorities (Tate and Bagguley 2017).

The Access and Widening Participation agenda at universities has focused on access mechanisms for disadvantaged secondary school pupils to enter undergraduate education. This is particularly challenging at highly selective institutions, like UCL and other Russell Group universities. Such universities also tend to perpetuate the inequitable structures which lead to awarding gaps in undergraduate degree results and result in limited access to postgraduate study.

3.1.1 Attainment

BAME and other disadvantaged students are less likely to be awarded a 2:1 or a first-class degree. In 2017-18, across all HEIs, there was a 13.2% gap between white and BAME students and the largest gap, 24.3%, was evident between Black and White students (Fig. 7; Advance HE 2019a).[10] At UCL, the proportion of BAME undergraduates getting a "good degree" (2:1/First) has increased since 2017 from 86% to 91%, but the gap has increased for Black students (83% in 2018 compared to 95% for White students). The national picture shows that less than two thirds of students from the lowest socio-economic backgrounds were awarded an upper-class degree in 2018-19, compared to 84.7% of students from wealthier backgrounds (OfS 2020a). Students who previously attended privately-funded schools are more likely than those from state-funded schools to progress to full-time postgraduate study. For first-generation students, undergraduate attainment rates and progression to postgraduate study are also consistently lower than for students whose parents have a higher education qualification (OfS 2020a; HESA 2020b).

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[10] This latter gap currently stands at 22% (OfS 2020c).

This is important because students without a 2:1 or first-class degree are less likely to apply for or to complete a successful application to postgraduate study. Graduates with a first-class degree are considerably more likely to gain access to doctoral programmes and to enter careers in academia (Williams et al. 2019; Duhs et al. 2019, Poku 2019). The emphasis on academic entry requirements and prior attainment in the PGR application process inevitably disadvantages those students who are already disadvantaged by systemic inequalities.

A recent open letter sent by a group of academic staff in the UK to the Executive Chairs of UKRI's funding bodies, challenges this focus on academic "excellence" in the doctoral admissions process (Giles et al. 2020). In particular, the authors argue that the current selection criteria are demonstrably biased against applicants from particular demographics and represent a major barrier to creating diverse cohorts in the Centres for Doctoral Training and Doctoral Training Programmes (CDTs/DTPs). Applicants are assessed and scored according to criteria that "reward opportunity, including financial security, and do not consider the potential of the student." In addition to undergraduate degree result, the criteria cited in the letter include rank in cohort, research experience, attendance at conferences, publications, awards, and previous institution.

In 2019, the Leading Routes' 'Broken Pipeline' report demonstrated that the kind of higher education institution a student applies from is a key factor influencing both students' decision making and the likelihood of application success. Black and minority ethnic students are less likely than White students to attend higher tariff institutions (Gov. uk 2019). The perception of UCL as an institution that sets high and competitive entry requirements will be a deterrent for some students whose academic results do not match their potential.

> "The persistence of racism and discrimination, as well as the unbalanced allocation of resources and opportunities in British schools, perpetuates class distinctions and facilitates academic achievement deficits for many young people from low-income backgrounds and from racialised minorities."

Figure 7: UK HEIs UK-domiciled first-degree undergraduate qualifiers by degree class and ethnic group 2017-18

		First/2:1		First		2:1		2:2		Third/pass		All
		No.	→%	No.	→%	No.	→%	No.	→%	No.	→%	No.
W	White	200,580	80.9	76,575	30.9	124,000	50.0	39,285	15.8	8,060	3.3	247,925
BAME	BAME total	49,300	67.7	15,085	20.7	34,215	47.0	18,745	25.7	77,555	6.5	72,800
A	Asian	22,340	70.0	7,110	22.3	15,225	47.7	7,705	24.2	33,750	5.8	31,895
AB	Bangladeshi	3,125	67.5	885	19.1	2,240	48.4	1,220	26.4	285	6.1	4,630
AI	Indian	8,370	75.7	2,935	26.5	5,435	49.2	2,215	20.0	470	4.3	11,055
AP	Pakistani	6,540	66.6	1,945	19.8	4,595	46.8	2,620	26.7	655	6.7	9,815
AO	Other	4,305	67.3	1,350	21.1	2,955	46.2	1,645	25.7	445	6.9	6,395
B	Black	12,215	57.5	2,970	14.0	9,245	43.5	7,060	33.2	23,230	9.3	21,255
BA	African	8,930	57.0	2,145	13.7	6,780	43.3	5,270	33.7	1,450	9.3	15,650
BC	Caribbean	2,710	59.2	670	14.6	2,040	44.6	1,445	31.6	420	9.2	4,575
BO	Other	580	56.3	155	15.2	420	41.1	345	33.5	105	10.2	1,025
C	Chinese	2,060	76.6	730	27.2	1,325	49.3	535	19.9	95	3.6	2,690
M	Mixed	9,755	77.2	3,330	26.3	6,430	50.9	2,335	18.5	550	4.3	12,640
O	Other	2,930	67.8	940	21.8	1,990	46.0	1,110	25.7	4,605	6.5	4,320
OA	Arab	1,035	67.4	335	21.9	700	45.6	400	26.2	100	6.4	1,535
OO	Other	1,895	68.0	605	21.7	1,290	46.3	710	25.4	185	6.6	2,785
All	All students	249,880	77.9	91,660	28.6	158,215	49.3	58,030	18.1	12,815	4.0	320,725

Source: Advance HE (2019a)

Black students and students from lower socio-economic backgrounds are more likely to attend post-92 universities, but PGR applicants who have attended research-intensive Russell Group institutions are more likely to be admitted to funded PhD places (Williams et al. 2019: 5). The open letter to UKRI proposes that a candidate's undergraduate institution is often reviewed as a proxy for academic achievement in the selection process. At present, little is known about the role of institutional pathways into postgraduate study (UKCGE 2019b). As part of extending the Access and Widening Participation agenda to PGR at UCL, this would be a valuable research project.

Moore et al. (2017), examining the role of excellence at universities, argue that "an emphasis on the performance of 'excellence' as the criterion for the distribution of resources and opportunity will always be backwards looking, the product of an evaluative process by institutions and individuals that is established by those who came before and resists disruptive innovation in terms of people as much as ideas or process" (7). The long-term implications of shifting the structural biases inherent in academic achievement and admissions may require that universities wanting to make significant change look to alternative metrics for the doctoral admissions process. In particular, academic entry requirements as the primary predictor of success at PGR level could be challenged.

A 2016 study found that "successful" PhD students, in terms of participation and completion, were most frequently characterised not by their prior degree results but by their interest in and understanding of a research programme, their incentives for completing a PhD, their personal integrity, and their interpersonal skills (Sørensen 2016: 297). Giles et al. (2020), in the open letter to UKRI, also propose that a candidate's potential for doctoral study should be evaluated via broader criteria and cautions further that a selection process that considers "whether a candidate has research experience, academic publications or conference attendance also largely captures access to opportunity and discriminates against candidates who have been unable to participate in these activities […] Use of other criteria, including academic prizes and the contents of reference letters, underpins practices that are known to be biased against candidates from particular demographics throughout their career" (3).

The barriers posed by a lack of research experience and insufficient understanding about the postgraduate research environment are addressed below in Section 3.4. The incentives to study, in terms of financial and time investment and career opportunities, are discussed in Sections 3.2 and 3.3. Academic achievement barriers, defined here as aptitude for research study measured by prior award attainment and institutional history, should be countered or replaced by measures in PGR admissions that give greater consideration to equity and especially to the Black and BAME student awarding gaps.

Contextual admissions, already used at the undergraduate level as a means to close the awarding gap, could be extended to the PGR application process, with possible review criteria including UK-domiciled students' contribution to a diverse and inclusive learning environment, a diagnostic essay, or a competency-based model along the lines proposed by Sørensen (2016), weighted to make a substantial contribution to overall candidate assessment (Williams et al. 2019). In a similar way that undergraduate degree programmes now offer pre-sessional preparation courses, deficits in research skills might be addressed by pre-doctoral training and undergraduate outreach activities as pathways to entry (discussed further in Section 3.4).

3.1.2 Application

An additional measure to improve equitable assessment of applicants and tackle issues around discrimination and bias is to require diverse representation for PGR application review committees, candidate interviews, and funding panels. To mitigate the additional labour this often requires from academic staff from under-represented groups, an EDI-led evaluation might also be provided by representatives from the university who are paid in this capacity.[11] In addition, all staff involved in the selection process should receive information resources or training about the EDI-related biases and barriers for PGR students.

The UCL Code of Conduct for Research Degrees currently recommends that all applicants are interviewed and that the selection decision *should be* made by "at least two members of academic staff, with appropriate expertise and experience." A further step proposed in the open letter to UKRI is to encourage guaranteed interviews for all BAME candidates and students with a self-declared disability applying to a CDT/DTP who meet the minimum requirements to pursue a PhD (Giles et al. 2020).

Currently at UCL, PGR admissions requirements, application processes, and selection practices vary from unit to unit, which presents a challenge to collating consistent and meaningful data about who applies to PGR at UCL, how they apply, and why they are, or are not, successful. It hinders the identification of potential bias (implicit or otherwise) and it also makes it difficult to identify areas of good practice. UCL Select has capability to capture data about ethnicity, gender, socio-economic background, and disability disclosure for PGR applicants who are not selected for interview, though at present it does not facilitate blind review of applications. While some departments and programmes make use of this portal, it is not used universally across UCL. An independent inquiry into postgraduate education by the Higher Education Commission in 2012 encouraged universities to "migrate their postgraduate application processes to a UCAS-style system" to improve transparency and data collection

(10). This call has been reiterated by Paul Wakeling, who has written extensively on issues of social inequality and access to postgraduate study, in his proposal for a national postgraduate application system as a way to make PGR admissions more visible and accountable and as a way to "collect vital statistics about the applicant pool and who makes it through to enrolment" (UKCGE 2019b).

There is substantial evidence of good practice in PGR admissions at UCL: Faculties already include recruitment targets for under-represented groups; the Faculty Doctoral Strategy Planning process requires the annual submission and discussion of diversity and inclusion reports; some programmes have initiated blind review of applications; and CDTs and DTPs also submit annual EDI action plans to the Doctoral School and to their funding councils which include applicant data by personal characteristics (ethnicity, gender, disability). This data allows some evaluation of potential blocks in the pipeline (i.e. if there are many BAME applicants but few offers issued, this may prompt further investigation into causes). Increasingly, funders are planning to tie the submission and operational success of CDT and DTP EDI action plans to a programme's continued funding.

However, the transparent tracking and evaluation of applicant data is less evident in other areas of the university and CDTs and DTPs account for only 25-30% of UCL's PhDs. For many other doctoral programmes, imposing financial penalties may not result in improved performance and may indeed lead to setting less ambitious EDI goals. In this case, difficulties in meeting EDI targets could instead prompt a UCL Equality Impact Assessment to assist with identifying more successful strategies.

Several universities in the United States have established a Postgraduate Diversity Advisory Council, with the goal of providing cross-institutional monitoring, promotion, and support for PhD recruitment and retention. The membership usually includes representation from the university's EDI office, from academic staff, and from the postgraduate student body.[12] Such initiatives have the potential to increase outreach, diversify recruitment, and improve the student experience of under-represented and marginalised students. They can also serve to develop and strengthen the sharing of good practice in admissions across the institution.

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[11] A similar model to Fair Recruitment Specialists in academic or professional services recruitment panels.

[12] Review of institutions with a (post)graduate diversity advisory council included the University of Oregon, Kentucky University, Brown, Cornell University, Northwestern, and the University of Chicago.

Academic Barriers	Recommendations
Attainment: • Awarding gap and over-representation of PhD candidates from Russell Group institutions **Application:** • Lack of consistent, transparent PGR application process and admissions data	(i) Extend the UCL Access and Widening Participation agenda and workstreams to PGR recruitment and student support; (ii) Commission research study into current PhD student journey from secondary to PGT level; (iii) Design a contextual PGR admissions process with an equity selection process built into decision-making; (iv) Require an EDI assessment for all PGR admissions and funding award panels; (v) Require targeted PGR EDI training for all members of PGR admissions and funding award panels; (vi) Propose a single application portal for PGR admissions (e.g. UCL Select) to enable collection of EDI data, facilitate transparent processes, and provide accessible data analysis; (vii) Introduce Equality Impact Assessment for PGR programmes that consistently fail to meet their own EDI targets; (viii) Establish a Postgraduate Diversity Advisory Council to promote and support PGR recruitment and retention.

3.2 Financial barriers

The financial cost of completing a PhD is considerable and poses one of the most significant potential barriers to postgraduate research study. A 2020 HEPI report (Cornell 2020) estimates that one-fifth of PhD students maintain employment alongside their studies in order to "make ends meet" (9). For self-funded students, which accounts for approximately 35% of UCL's PGR community, the combined tuition fees and living costs are likely to fall between at least £20,000 and £23,000 per year for full-time enrolment. Fees for non-EU students are of course substantially higher. UKCGE's June 2020 policy briefing on BAME PGR access and participation shows that "all minority ethnicities are more likely than White PGRs to have no award or financial backing for tuition fees" (Fig. 8).[13]

The introduction of the UK Government's Postgraduate Doctoral Loan in 2018/19 now allows UK national and EU national students to borrow up to £25,700 annually; interest (RPI plus 3%) accrues from the first loan payment and repayments are due when the loan applicant earns over £21,000 per year. There is currently no Sharia-compliant loan mechanism available from the government for Muslim students.

Figure 8 (below): No award or financial backing for tuition fee, expressed as a percentage of the total PGR population.
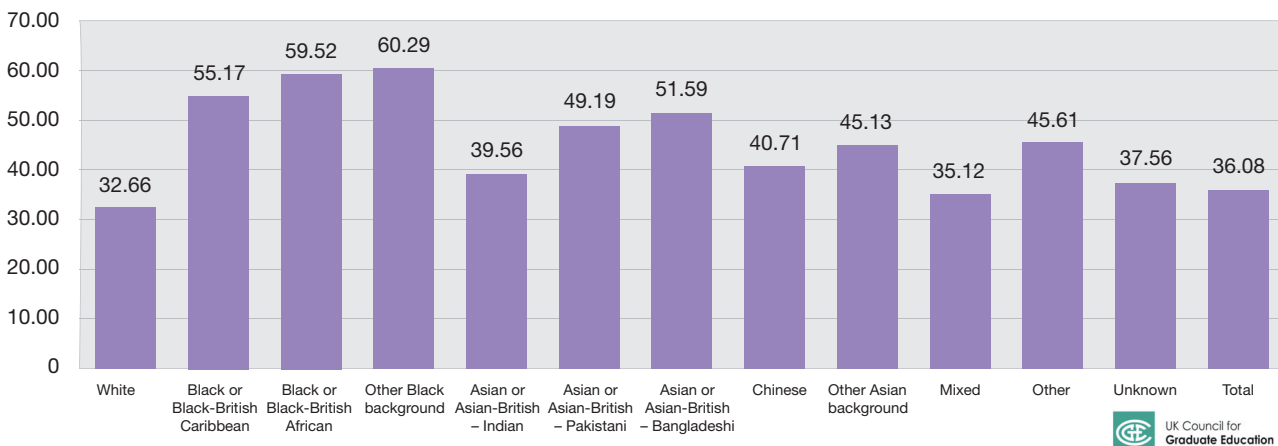
For students who pursue a fully-funded PhD position, sponsored by research councils, charitable foundations, industry, or through a UCL studentship or scholarship, the competition is intense. UCL's Student Funding Office webpage advises that where academic excellence is an eligibility criterion, this signifies that "applicants are normally required to have, or expect to achieve, a first-class UK Bachelor's degree or an overseas qualification of an equivalent standard." As discussed above, the persistence of the awarding gap means that some disadvantaged groups of students motivated to enrol for PhD study may not be competitive for funded studentships, especially when these awards are not means-tested.

Some funding schemes specify financial need-based criteria and the new, sector-leading UCL Research Opportunity Scholarship is a response to UCL data which shows that students from some ethnic groups are much more likely to experience financial problems (UCL Office for Equality, Diversity and Inclusion).[14] The UCL-ROS is directed to students from Black, Pakistani, and Bangladeshi ethnic groups who intend to enrol for a PhD in faculties with the most significant under-representation[15] and it includes consideration of financial need based on socio-economic background. Currently, the programme has guaranteed funding for five places and continues to seek philanthropic support to extend this to at least 15 places over three years.

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[13] At UCL, 2018/19 data for UK-domiciled students record 45% of Black students, 43% of Chinese students, 37% of students identifying as "Other ethnic background," 35% of Asian students, and 30% of White students receive "no award or financial backing."

[14] In 2019, 47% of applications to the Financial Assistance Fund were from BAME students (UCL 2020 Race Equality Charter).

[15] Arts and Humanities; Social and Historical Sciences; Mathematical and Physical Sciences.

White	Black or Black-British Caribbean	Black or Black-British African	Other Black background	Asian or Asian-British – Indian	Asian or Asian-British – Pakistani	Asian or Asian-British – Bangladeshi	Chinese	Other Asian background	Mixed	Other	Unknown	Total
32.66	55.17	59.52	60.29	39.56	49.19	51.59	40.71	45.13	35.12	45.61	37.56	36.08

Source: UKCGE (2020a)

3.2.1 Investment

A recent HEPI report of 'Postgraduate Education in the UK' (House 2020) presents an overview of the measures used to quantify the benefits that accrue as a result of a postgraduate qualification in the UK. The 'postgraduate premium' includes higher salary, greater employability, and access to the professions, and there are also important non-financial motivators such as intellectual ambition and career satisfaction. There is a lack of data about the current 'postgraduate research premium', but it is clear that for individual PhD students who are not in receipt of full funding, the investment in doctoral education is costly and lengthy - in terms of fees, subsistence, and foregone earnings for an average period of three to four years. For prospective PGR students, consideration of these costs will be balanced with the perceived value of completing an advanced degree.

The availability of the Postgraduate Doctoral Loan provides access to a PhD programme for those without sufficient salary (in the case of part-time PhD students), savings, and/ or expectation of family financial support, but this mechanism also requires students to go into debt and such decisions may be measured against levels of existing and cumulative debt accrued from undergraduate and postgraduate taught loans. The lack of funding schemes for Master's programmes means that the majority of UK-domiciled PGT students, around 65%, need to self-finance, which includes those taking out a Postgraduate Master's Loan (House 2020).

A 2018 Office for Students review of the effects of the Postgraduate Master's Loan on student entrant numbers found that the maximum loan amount is increasingly insufficient to meet the costs of fees and subsistence, particularly as PGT fees at many HEIs have risen since the introduction of the loan scheme. Students from lower socio-economic backgrounds may be especially averse to accumulating further debt and, particularly for students without recourse to a financial safety net, this may play a significant role in decision-making about extending their studies to PGR level. The HEPI report (House 2020) finds that the introduction of the Doctoral Loan has done little so far to affect the number of PhD entrants, perhaps because the loan amount is "insufficient to cover the living costs of a full-time three- or four-year PhD" (6).

It is important to acknowledge that the proportion of students who take out a Postgraduate Master's Loan has been greatest among Black students, students who disclose a disability, and students from the lowest-participation areas (House 2020). Pásztor and Wakeling's research about social stratification in access to doctoral study draws on relative risk aversion theory to argue that "advantaged individuals are more likely to engage in financially costly, status-seeking behaviour than those from disadvantaged backgrounds, who will prioritise the minimisation of financial risk" (2018: 985).

In undergraduate education there are already clear indicators that attrition is more likely to be driven by financial factors for Black students than for White students (UCL Race Equality Charter 2015). Funding schemes that support promising students who are under-represented in PGR to complete a PGT degree as a bridge to PhD enrolment could help to create a more accessible pathway. The decision to invest in doctoral education may also be influenced by expectations of future career prospects. Pásztor and Wakeling (2018) make the point that if the PhD is understood by most students as a gateway to an academic career, then "particularly in times of austerity, the opportunity costs of a relatively long time to degree could be unaffordable for many, given an increasingly competitive job market with no guarantee of securing an academic job upon completion" (983).

Further, the UCL Race Equality Charter 2015 submission noted that there is evidence to suggest that students from some BAME communities place a higher value on occupations where BAME people are more visibly successful. For those prospective PhD students who look toward careers beyond academia that don't require doctoral training, the decision to apply may be weighed against the perceived benefits of a PhD over and above the shorter and cheaper route of a PGT degree.[16] HEPI's recent report (House 2020) includes an analysis of postgraduate student outcome benefits by gender, finding that salaries for women with PGT or PGR degrees progress less rapidly than salaries for men (118). It also concludes that there are differences by socio-economic background, as salaries in the professions for working-class graduates with a PGT or PGR degree are less than those coming from more affluent families, after controlling for gender, ethnicity, and profession (120).

The financial implications of prolonged educational training, along with potentially differential salary outcomes and the prospect of cumulative debt, can serve to disincentivise investment by groups of students who are already under-represented, or feel excluded from the postgraduate research environment. Increasing awareness and demonstrating the financial and non-financial benefits of PGR students' time and cost investment is key. This includes increased access to academic career paths, communicating and facilitating pathways to careers beyond academia, and providing an inclusive student experience (discussed below in Sections 3.3 and 3.4). The adverse effects of financial barriers to widening participation efforts at PGR level could be further mitigated by increasing the availability of funding support for disadvantaged and under-represented groups in the postgraduate research community at UCL.

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16   A 2009 study in the *Journal of Education Policy* found that the earnings premium in the UK for a PhD was 26%, whereas the premium for a one-year PGT programme was almost as high, at 23% (calculated across all subjects). There is a lack of more recent evidence about the PhD earnings premium as much of the research in this area conflates PGT and PGR outcomes.

3.2.2 Funding

UCL's CDTs and DTPs report annually to the Doctoral School on the number of applications they have received and number of offers they have accepted. The reports also include information about the sources of funding for students in the cohort, and there is another section indicating gender, age, disability, and ethnicity characteristics of students who have received awards. However, these data fields could be combined to provide a clearer and more comprehensive picture of the applicant pool and, in particular, to indicate whether there is an insufficiently diverse applicant pool or whether diversity in the applicant pool is insufficiently reflected in the awards given. Each scenario would suggest different responses.

The Research On Research Institute report, titled '21st-Century PhDs: why we need better methods of tracking doctoral access, experiences and outcomes', poses the question of whether inequalities in funding decisions might be driving inequalities in doctoral access and success (Wakeling & Hancock, 2019). This issue, closely related to the application processes discussed above, suggests the need for a more transparent account from doctoral programmes about how places and studentships are allocated.

The same report also proposes that the introduction of socio-economic characteristics, which are not currently collected for doctoral applicants, students, or graduates, could offer further insight into the impact of funding sources on student outcomes (also UKRI & Advance HE 2019a).[17]

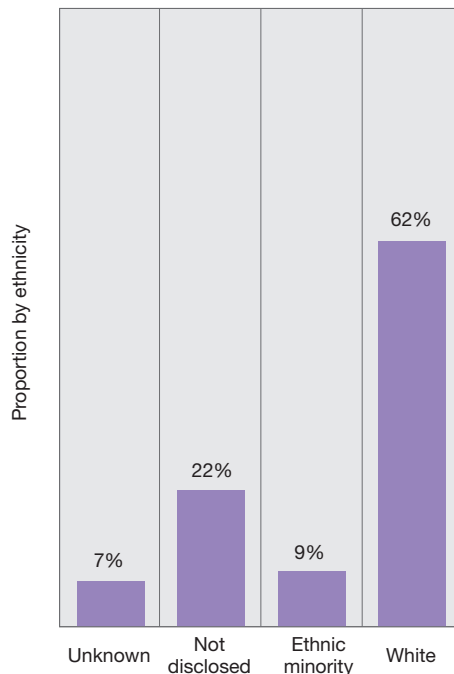The Broken Pipeline report (2019) calls for greater accessibility to public data that would enable more effective identification and evaluation of the conversion rate of Black applicants, in particular, to secure funded PhD places. This call is echoed in the recent open letter to UKRI (Giles et al. 2020).

In June 2020, UKRI published a five-year review of funding for their doctoral studentships, which found that ethnicity data was unavailable for almost 30% of awardees. Although they advise that this unknown data limits the conclusions they have drawn about the ethnicity profile of studentships, they confirm that the proportion of awards made to students from ethnic minorities (9%) is less than the PGR population estimate (17%) (Fig. 9). Further, the proportion of studentships awarded to female applicants (40%) is less overall than HESA's estimate of females in the PGR population (49%), and 7% of studentship awardees had a disclosed disability, which is less than the 9% of students with a declared disability in the PGR population (15).

While UKRI addresses the studentships awarded to a more general category of ethnic minority students, the Leading Routes organisation has revealed that of the 19,868 UKRI-funded studentships awarded between 2016 and 2019, only 245 (1.2%) were awarded to Black or Black Mixed students. The 'Broken Pipeline' report suggests that a more direct way to attract and retain students who are severely under-represented in doctoral education and to enact meaningful change in the system is for HEIs to ring-fence funding as a form of positive action (2019; also Arday 2017; Fazackerley 2019; Giles et al. 2020).

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17   As identified by the UKRI and Advance HE UK review of Research and Innovation, this lack of knowledge has wider ramifications, as socio-economic status intersects with other identity characteristics.

Figure 9: Ethnicity composition for UKRI-funded studentships 2014/15–2018/19

Source: UKRI (2020a)

Research funders such as UKRI and the Wellcome Trust are also encouraging universities to review how their funded PhD places are awarded. In addition, they are also requiring universities to submit robust EDI action plans, to demonstrate how they are being operationalised, and to track progress. The university could require this step for all PhD funding awards. The Wellcome Trust (2020) has also created a bi-annual research enrichment fund of up to £20,000 to enable current grant holders "to tackle barriers to diversity and inclusion in their work" UCL could develop a similar initiative to advance and incentivize EDI objectives in existing research projects.

UKRI and Advance HE's international review of EDI interventions in Research and Innovation (2019b) concludes that positive action has been particularly effective in improving the representation of women in funding award schemes and in improving access to higher education, as well as reducing bias towards women in recruitment situations.[18] The review notes that the lack of quotas and targeted actions is explained by resistance to these types of interventions, which may be perceived as or presumed to be discouraging or insulting. Such initiatives must prioritize the experience of the target population, and include consultation with the intended beneficiaries in any implementation plan.

As described above, the UCL-ROS is one such model for equity of opportunity and could be extended to include all areas of research. The most recent UCL Race Equality Charter recommends extending the model to all UKRI-funded CDTs and DTPs, so that, in response to data that indicate a lack of diverse and inclusive representation, a specified number of places would be reserved on the basis of ethnicity, gender, disability, or other EDI considerations.

"The 'Broken Pipeline' report suggests that a more direct way to attract and retain students who are severely under-represented in doctoral education and to enact meaningful change in the system is for HEIs to ring-fence funding as a form of positive action."

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[18] Evidence cited from the Max Planck Society, Science Foundation Ireland, and the Swiss National Science Foundation. Interventions include lower entry scores, pre-university programmes for targeted populations, reserved places on programmes for targeted populations, and dedicated financial assistance programmes.

Financial Barriers	Recommendations
Investment: • Accrued loan debt for self-funded students from disadvantaged backgrounds **Funding:** • Financial need of disadvantaged and under-represented students; • Impact of awarding gap on competition for funded PhD positions; • Lack of transparency in funding decisions.	(i) Provide one-year needs-based fully funded studentships or fee waivers at PGT and MRes level to under-represented/ disadvantaged students who enrol for 1+3; (ii) Create an enhanced reporting mechanism for CDTs and DTPs to evaluate effects of funding decisions on the diversity of the cohort; (iii) Collect data on socio-economic characteristics for all PhD programmes; (iv) Fundraise to increase the number of UCL-ROS places and consider other dedicated financial assistance programmes for disadvantaged populations; (v) Analyse the distribution of funded doctoral opportunities across UCL; (vi) Identify a percentage of research council funded places to be awarded to disadvantaged and/or under-represented students within the cohort; (vii) Require EDI reflection at department level for PhD funding decisions; (viii) Consider EDI Research Enrichment awards.

3.3 Career barriers

There is a lack of current data about the career expectations and career progression of PhD students nationally. The Research On Research Institute (Wakeling & Hancock 2019) has identified this as a "severe deficit in our understanding of doctoral employment" which stands in sharp contrast to the progressive efforts of other countries to track PhD career outcomes over the long term. Indeed, Vitae's 2012 report 'What do researchers want to do?' and their 2013 publication 'What do researchers do?' are the most recent detailed analyses of UK doctoral students' intentions and perceptions of career development as well as trends in employment for different groups of doctoral graduates. Both reports were based on 2010 data and while the career intentions report includes an analysis by gender, neither report considers the role of ethnicity, disability, nor other protected characteristics.[19]

A follow up article from Vitae in September 2019, 'Do researchers' careers have to be precarious?', records relative precarity for all doctoral graduates entering HE research (only 17% are on an open-ended contract three and a half years after graduating), but notes that current methods of tracking are insufficient for providing analysis by gender or ethnicity: "despite research and policy concerns around the lack of BAME academics working in HE […], the current lack of systematic career tracking of doctoral graduates and early career researchers means that issues affecting the supply and subsequent paths of highly-skilled postgraduate talent remain little understood" (4-5).

The problem of job insecurity for the research community in general is well acknowledged. With an increasing number of PhD students and a shortage of permanent academic staff positions available, there is growing tension in discussions about career outcomes for doctoral students. In the Wellcome Trust's recent research culture survey (2020), 45% of respondents who had left academia reported that one of the reasons for their departure was the difficulty of finding a job and facing an insecure career path. Only 19% of early-career researchers felt secure in pursuing an academic career. Current trends in academic recruitment also continue to disadvantage those who have already experienced barriers in their educational experience. The disproportionate effects of this career insecurity on disadvantaged and under-represented students in the PGR community need to be explored in more detail by universities and by higher education regulators and government who set ambitious targets for PhD recruitment.

Without comprehensive data about the expectations of prospective PhD candidates, the motivations of PhD students, and the career pathways of PhD graduates with varying demographics, it is difficult to determine the career-related barriers at different stages of the doctoral journey for different groups. However, the issues of under-representation and patterns of inequality in academic careers are clearer to identify. The lack of role models will likely play a significant part in some students' decisions not to continue to PGR level as well as affecting the quality of the student experience for those who do continue.

3.3.1 Representation

Advance HE's annual staff statistical report provides national figures on the proportion of academic staff in BAME categories (Fig. 10), as well as by gender and disclosure of disability. In 2019 the staff report recorded an increase in the number of BAME academic staff, though the number of UK-BAME academics was far below the number of non-UK BAME nationals. The report also recorded the persistence of inequalities, with lower proportions of BAME than White staff on open-ended or permanent contracts, in senior management positions, and on higher salary bands. Leaving rates were higher for BAME academics. Mirroring the postgraduate research student figures, the under-representation of academics of colour is also more pronounced for Black academics, who comprise 1.9% of all academic staff in UK HEIs. According to HESA's 2018/19 HE staff figures, 71% of UCL's academic staff are White, 11% are Asian, 2.5% are Mixed, and 0.7% are Black. Over 12% were recorded as 'Not Known' (HESA 2019b; also Fig. 11 for data by Faculty).

It is clear that to achieve more equitable representation in academic staff positions, more students of colour, and Black students in particular, need to be completing PhDs (Olonisakin 2020). Yet the lack of role models at the university who can "understand and respond to specific cultural reference points", who can provide guidance from lived experience, and who can inspire progression to an academic career, are likely deterring factors for students to apply for and to complete a doctorate (Race Equality Charter 2015; also Advance HE 2018a). Further, the Equality Challenge Unit has identified "particular sticking points" for BAME doctoral graduates who attempt to secure their first permanent academic position, creating a recursive situation (2015: 39-40).
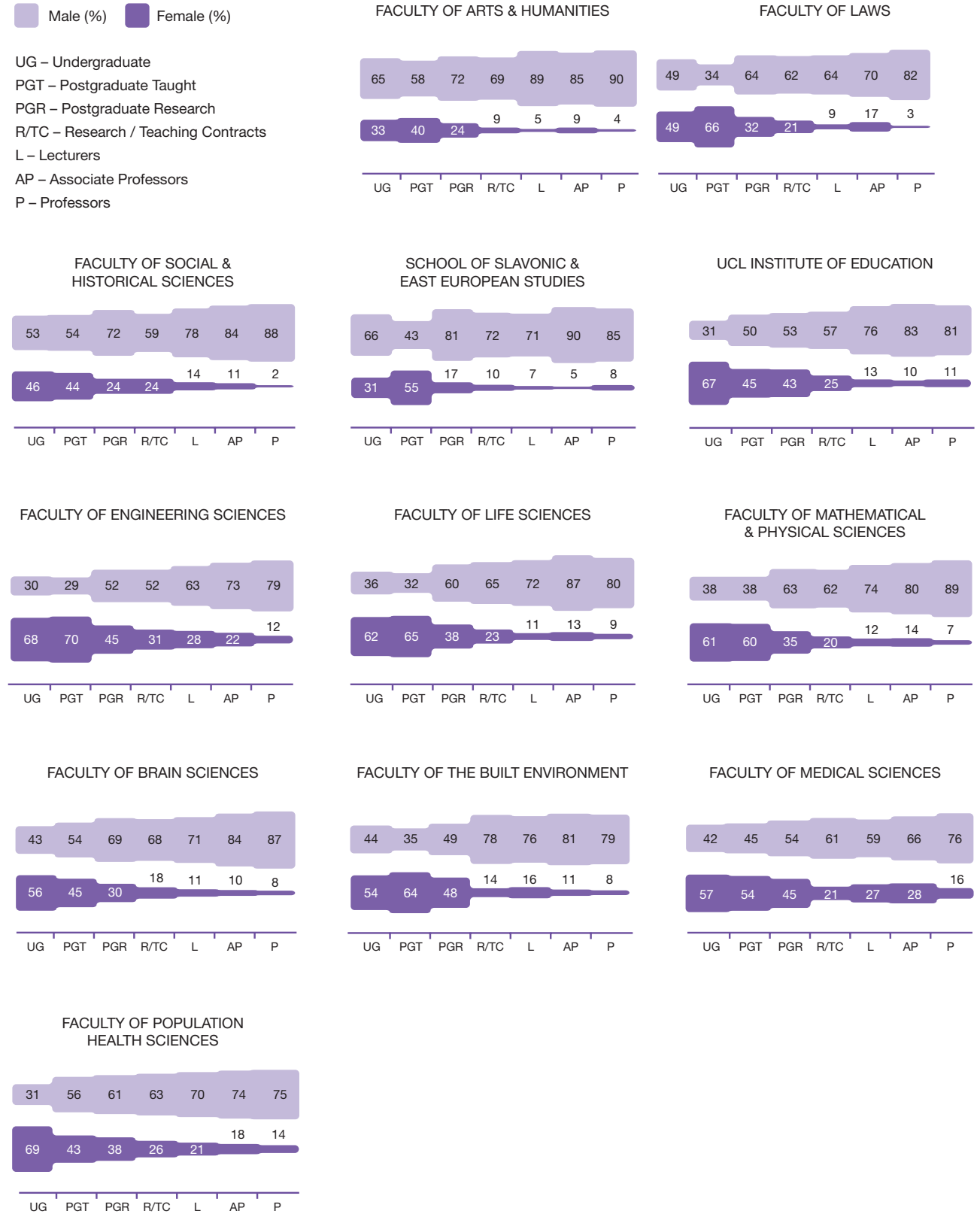
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[19] The Longitudinal Destination of Leavers of Higher Education Survey (L-DLHE) is designed principally for first-degree holders, who comprise the large majority of its respondents. Both Research On Research and Vitae conducted analyses of DLHE data in 2019 with the intention of better understanding doctoral outcomes and both concluded that it is not fit for this purpose (Wakeling & Hancock 2019; Vitae 2019a). The Graduate Outcomes survey has recently succeeded the L-DLHE and tracks results by protected characteristics, but records occupation destinations only 15 months after graduation.

Figure 10: Academic staff by professional category and ethnic group

		Professors			Non-professors			All academic staff	
		No.	↓ %	→ %	No.	↓ %	→ %	No.	↓ %
UK nationals									
W	White	13,650	91.2	11.1	108,790	89.9	88.9	122,435	90.1
BAME	BAME total	1,315	8.8	9.7	12,175	10.1	90.3	13,490	9.9
A	Asian	520	3.5	9.4	4,965	4.1	90.6	5,485	4.0
B	Black	95	0.6	4.7	1,945	1.6	95.3	2,040	1.5
C	Chinese	325	2.2	16.3	1,665	1.4	83.7	1,990	1.5
M	Mixed	185	1.2	7.8	2,165	1.8	92.2	2,350	1.7
O	Other	195	1.3	11.9	1,435	1.2	88.1	1,625	1.2
All	All staff	14,965	100.0	11.0	120,965	100.0	89.0	135,930	100.0
Non-UK nationals									
W	White	3,705	85.7	9.0	37,650	69.2	91.0	41,355	70.4
BAME	BAME total	620	14.3	3.6	16,770	30.8	96.4	17,385	29.6
A	Asian	255	5.9	4.0	6,140	11.3	96.0	6,395	10.9
B	Black	30	0.7	1.8	1,630	3.0	98.2	1,660	2.8
C	Chinese	170	3.9	3.3	4,900	9.0	96.7	5,070	8.6
M	Mixed	50	1.2	2.9	1,685	3.1	97.1	1,740	3.0
O	Other	115	2.6	4.5	2,405	4.4	95.5	2,520	4.3
All	All staff	4,320	100.0	7.4	54,420	100.0	92.6	58,740	100.0

Source: Advance HE (2019c)

Figure 11: UCL academic pipeline by ethnicity 2018/19

Male (%)   Female (%)

UG – Undergraduate
PGT – Postgraduate Taught
PGR – Postgraduate Research
R/TC – Research / Teaching Contracts
L – Lecturers
AP – Associate Professors
P – Professors

FACULTY OF ARTS & HUMANITIES

UG	PGT	PGR	R/TC	L	AP	P
65	58	72	69	89	85	90
33	40	24	9	5	9	4

FACULTY OF LAWS

UG	PGT	PGR	R/TC	L	AP	P
49	34	64	62	64	70	82
49	66	32	21	9	17	3

FACULTY OF SOCIAL & HISTORICAL SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
53	54	72	59	78	84	88
46	44	24	24	14	11	2

SCHOOL OF SLAVONIC & EAST EUROPEAN STUDIES

UG	PGT	PGR	R/TC	L	AP	P
66	43	81	72	71	90	85
31	55	17	10	7	5	8

UCL INSTITUTE OF EDUCATION

UG	PGT	PGR	R/TC	L	AP	P
31	50	53	57	76	83	81
67	45	43	25	13	10	11

FACULTY OF ENGINEERING SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
30	29	52	52	63	73	79
68	70	45	31	28	22	12

FACULTY OF LIFE SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
36	32	60	65	72	87	80
62	65	38	23	11	13	9

FACULTY OF MATHEMATICAL & PHYSICAL SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
38	38	63	62	74	80	89
61	60	35	20	12	14	7

FACULTY OF BRAIN SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
43	54	69	68	71	84	87
56	45	30	18	11	10	8

FACULTY OF THE BUILT ENVIRONMENT

UG	PGT	PGR	R/TC	L	AP	P
44	35	49	78	76	81	79
54	64	48	14	16	11	8

FACULTY OF MEDICAL SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
42	45	54	61	59	66	76
57	54	45	21	27	28	16

FACULTY OF POPULATION HEALTH SCIENCES

UG	PGT	PGR	R/TC	L	AP	P
31	56	61	63	70	74	75
69	43	38	26	21	18	14

Source: UCL Office for Equality, Diversity and Inclusion

The under-representation of women in STEMM careers is also a well-known phenomenon and is "comparably well-researched" (Wakeling & Hancock 2019). In a recent survey, nine out of ten women reported experiencing barriers to pursuing a career in STEMM in and beyond academia and more than a quarter (26%) encountered more barriers than enablers (WISE Campaign & Amazon 2019). The Equality in Higher Education report (Advance HE 2018) and ASSET 2016 survey (ECU 2016) both emphasise the under-representation of women in senior academic staff positions, which is more acute for BAME women, as well as the inequitable allocation of teaching and pastoral tasks, and lower salary projections for women when compared to men with the same postgraduate qualifications.[20] These are cited as factors that may inhibit the access, success and progression rates for female PGR students in STEMM. UCL is distinguished by having the highest number of female academic staff and the highest number of female professors in all UK universities, but as Fig. 5 above (Section 1.2) indicates, the trend of lower female recruitment in STEMM fields persists.

Addressing equitable recruitment is a priority for UCL in both the Athena SWAN and the Race Equality Charter action plans and there are ongoing strategies to increase the proportions of currently under-represented academic staff.[21] However, if students see the progress to an academic career as the primary aim of a doctoral degree, they are likely to experience the scarcity of role models as a barrier to their sense of belonging and to their own career prospects. Interventions to address the lack of diversity in academic staff have been proposed by the Equality Challenge Unit, including conducting EDI audits of recruitment and promotion rounds to ensure that due process is being followed and weighting contribution to diversity and criteria as a recruitment criterion, which might advantage candidates from under-represented groups but could also lead to a more inclusive environment by increasing the number of staff with demonstrable experience and expertise in EDI practice.

An additional example from the University of West London is to model an inclusive strategy informed from the ground up that includes PGR students as interviewers in the selection panels for new academic staff. The model was "successful in creating a culture of trust, participation and inclusion that makes changing for the better a collective effort and one that does not threaten but instead embraces and enacts positive change" (Gamlath 2020).

3.3.2 Guidance

To support students with heightened concerns about marginalisation and the adequacy of career progression opportunities (Arday 2017), earlier and more continuous guidance should be offered. This should include how to be competitive for an academic staff position and what an academic career involves. The importance of academic career mentoring is a particularly common theme in studies of BAME PGR experience (Arday 2017; Wellcome Trust 2020; Williams et al. 2019). Targeted career development programmes for PGR students, led by professionals who understand the unique challenges faced by under-represented and disadvantaged students, would be a proactive step in providing not only information and insight but also links to professional development and networking opportunities with academics and alumni.

At UCL, existing programmes – such as StellarHE, the strategic executive development programme for diversity in leadership, and the BMEntor cross-institutional mentoring scheme for BAME academics and researchers – could be actively promoted to PGR students and to PGT students interested in continuing their studies. UCL's Careers Extra programme, currently directed to the needs of under-represented UK undergraduate students, could be extended to the postgraduate community.

3.3.3 Culture shift

The national results of the 2019 Postgraduate Research Experience Survey revealed that for 31% of respondents the primary motivation of a PhD was to "improve academic career prospects", while only 9% saw a PhD as improving prospects for a career beyond academia (Fig. 12). Only 31% of respondents said they had received advice on career options. The Wellcome Trust research culture survey has also indicated that most participants 'struggled to think about careers outside academia' (2020). The framing of the PhD as an academic apprenticeship continues to prevail, even though the recent Concordat to Support the Career Development of Researchers (Vitae 2019b) emphasises the need, in the current context of expanding PhD recruitment, to encourage doctoral students to pursue careers across a wide range of employment sectors and to ensure that all students have access to professional development opportunities that equip them to be "adaptable and flexible in an increasingly global research environment and employment market" (6).
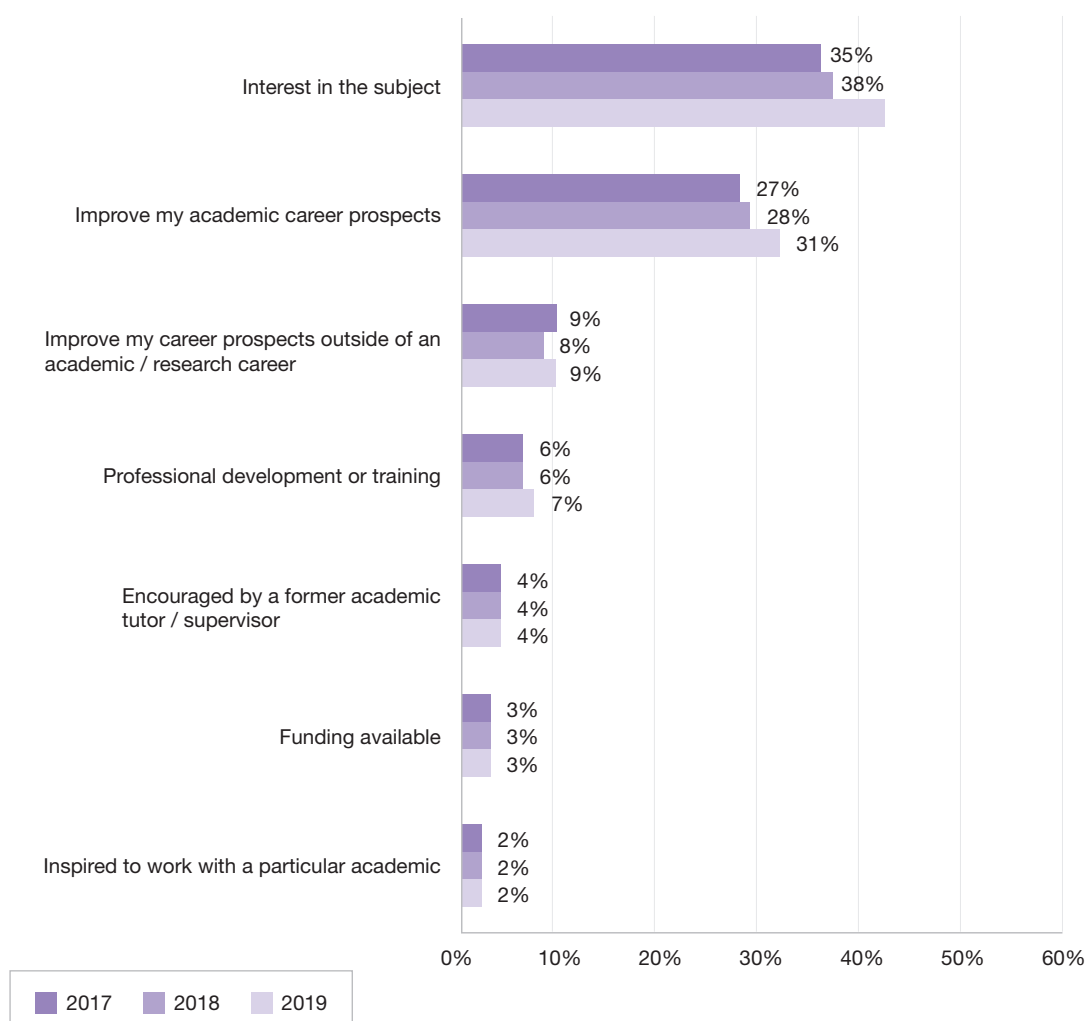
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[20] 14% lower for female postgraduates (UKRI & Advance HE 2019a).

[21] UKRI and Advance HE (2019a) report that while the disclosure of disabilities among academic staff has increased over recent years, it remains low (4.3%) and is even lower among staff on research contracts (3.2%).

The career barriers that exist for a large number of aspirational doctoral candidates, and that may influence their experience of the degree, could be addressed by shifting the narrative to more accurately reflect and to more effectively prepare students for the wider economy outside of the university sector. The Research On Research Institute's report on '21st-Century PhDs' proposes that "it is not enough to expand the PhD; the PhD must change" in a way that recognises and advertises doctoral degrees as training for a broad range of careers (Wakeling & Hancock 2019: 5). Universities could do much more to create "clearer road maps of opportunities", as advised by the Wellcome Trust (2020) and to "better signpost the variety of careers available", as recommended by The Royal Society (2018). The greater challenge is to persuade more academics and PhD supervisors to embrace a broader view of the purpose of a PhD that actively values careers beyond academia.

"The national results of the 2019 Postgraduate Research Experience Survey revealed that for 31% of respondents the primary motivation of a PhD was to "improve academic career prospects", while only 9% saw a PhD as improving prospects for a career beyond academia."

Figure 12: PRES 2017-2019: Motivations for pursuing a PGR degree

Source: Advance HE (2019b).

Career Barriers	Recommendations
Representation: • Lack of BAME role models • Lack of Black role models • Lack of women role models in STEMM **Guidance:** • Academic career preparation • Early awareness of careers beyond academia **Culture shift:** • The framing of the PhD as an academic apprenticeship	(i) Require contribution to diversity and inclusion criteria for academic staff appointments;
	(ii) Adjust the professorial promotion criteria to recognise the way in which candidates support colleagues to succeed;
	(iii) Specialised academic career mentoring and advocacy schemes for under-represented communities, including BAME PGR students and female PGR students in STEMM fields;
	(iv) Early and reiterative advice and information about careers beyond academia;
	(v) Develop training resources for supervisors, DGTs, and PGR administrators to provide structured support to engage in career development interviews with doctoral students.

3.4 Knowledge barriers

Universities have become increasingly concerned with ensuring that students making the transition between secondary and undergraduate education are well informed and well prepared in ways that will facilitate their access and success. Prospective students are offered detailed guidance about course choices, student life, and skills development. Widening Participation activities also account for the key factors that are more likely to exclude some groups of students from accessing undergraduate education and completing their degree successfully. Universities now routinely operate school outreach programmes, offer summer schools to provide experiential opportunities, and, in some cases, create pre-university bridging programmes as a response to addressing achievement gaps.

The kinds of interventions that exist to attract under-represented students to undergraduate education have been less apparent in the transition to postgraduate research and when compounded by academic, financial, and social barriers, this lack of knowledge places them at a significant disadvantage. Understanding the topography of academia is key to PGR students' ability to navigate the opportunities and experiences of a PhD. Any prospective student considering a doctorate must begin with an understanding of what it is, what is expected, and how to apply.

The gradual acquisition of this information may be assumed, but it is not offered or available in equal measures to all students. Wakeling's research on barriers and motivations to research degree study (2015) found that "high-flying and relatively privileged graduates of elite universities reported a lack of understanding of postgraduate admissions and funding, which suggests graduates from backgrounds and institutions with less history of PGT study will have even greater difficulties" (104 fn. 37).

Those who have completed undergraduate and taught postgraduate education but are the first in their family to have attended university are particularly vulnerable to these knowledge gaps. These gaps may also be experienced by students who are excluded from the informal networks of information and opportunity that circulate in the university (i.e. lack of social capital). Preconceptions and discriminatory biases about who belongs (or who might want to belong) in the academic research environment, and their suitability or aptitude for doctoral study, may disadvantage already under-represented students and students whose potential isn't reflected in the conventional measures of academic achievement. As discussed above (Section 3.1), the transparency of the selection process at the undergraduate level is by no means reflected for doctoral programmes; selection is often determined by an individual academic, and the process is therefore more vulnerable to inherent bias.

Deficits in knowledge and experience of the research environment can also create participatory barriers. There are "powerful presumptions" that exist around PhD students' level of independence, their social and emotional maturity, and their preparedness for doctoral study, but for most students who start a PhD, the transition to PGR is complex and challenging (McPherson et al. 2017: 42). Feelings of anxiety, self-doubt, and isolation are not unusual (Levecque et al. 2017; Ali et al. 2007) and may be experienced even more acutely by students who have less prior knowledge of the system and by students who also lack a sense of belonging in their academic community (including international students).

The phenomenon of 'imposter syndrome' is commonly felt by PhD students and is closely connected to a perceived lack of expertise despite evidence of high achievement. While this often relates to navigating a new field of intellectual study, it can also be amplified by having to navigate an unfamiliar working environment and by the experience of working in a more prestigious institution. Without additional and targeted guidance and support, students who already feel alienated by their own experience of under-representation and lack of inclusion are more likely to have lower levels of confidence in their ability to complete a PhD. This can potentially lead to longer completion rates and higher rates of attrition (Thomas 2012; Vitae 2018).

The importance of formal and informal mentoring structures in guiding students' progress to and through doctoral study has been emphasised by several studies (CGE 2007; Arday 2017; Inge 2018; Williams et al. 2019). The lack of data and shortcomings in the transparency of the PGR application system make it difficult to identify how students learn about the PhD as a qualification and how they find the opportunities they apply for, but the under-represented and disadvantaged students cited in these studies have generally experienced less access to appropriate information and advice on application and funding processes throughout their student journey. To help minimise some of these challenges, formal mentoring or information workshops could be embedded into PGT or final-year undergraduate programmes. They could also be led by paid PGR ambassadors from under-represented groups.

3.4.1 Information

In a mode similar to the Widening Participation outreach programmes that are offered to bridge the gaps between school and university, some universities in the United States have introduced pre-doctoral programmes, workshops, and fellowships for final-year undergraduates or Master's students from under-represented minority groups.[22] These can provide a 'taster' of the postgraduate research environment, preparatory skills training, mentoring and networking, as well as offering information about how to find programmes, how to prepare applications, and how to identify further funding opportunities.

Other examples of preparatory courses focus on providing information about the transition to postgraduate study for groups of under-represented students, with the aim of improving their understanding of the demands and expectations of postgraduate education. In 2017, a consortium of five Russell Group universities[23] collaborated to design and provide a 'Prepare for Postgrad' pre-entry online course for UK BAME students and groups of students with low participation rates. The supplementary aims of the course were to build confidence and provide information about resources to support success (OfS, 2017) and while the course was designed for enrolled PGT students, the model could be adapted for potential PGR candidates. One such example already offered at UCL has been created by the London Interdisciplinary Biosciences Consortium (LIDo), which, as part of its DTP diversity action plan, launched a 'Pathway to PhD' workshop in 2018 to support BAME postgraduate students from non-Russell Group universities in the creation of compelling PhD applications and networking with "relatable role models."[24] Further iterations of this model could also draw from the BAME PGT population at UCL.

To increase diversity in doctoral education, universities need to do more to identify, connect with, and *motivate* under-represented students with the potential to do a PhD. The most likely path to a PhD for UK students is via a PGT degree and strategic interventions to provide information and guidance early in the PGT programme, especially on preparing a competitive application, could encourage and support more students to apply. Working with PGT staff, advisors, and personal tutors to improve their awareness and understanding of the barriers to PGR for under-represented students could also be an important factor in increasing the interest and understanding of potential candidates. However, given the short window to make contact with PGT students between the start of their studies and the timeline for PhD applications, designing even earlier interventions, at the undergraduate level, is also recommended. At the City University of New York, the Graduate Center offers a Pipeline Fellows Program at both UG and PGT levels. The first strand of the programme recruits 30 promising undergraduates from under-represented minority groups and exposes them to postgraduate education "as a next-step possibility", offering them background knowledge and some preparatory skills, with fellows attending a funded intensive summer school. The second part then recruits and admits diverse postgraduate candidates to the faculties of humanities and social sciences as PhD students (Cassuto, 2019).

3.4.2 Experience

In recent years, American universities have also given increasing attention to creating and funding opportunities for undergraduate research experience. Indeed, many government-sponsored funders now require undergraduate research as a component of a PI's project impact and objectives. The opportunity to engage with academic research activities will function for many students as a gateway to postgraduate study, including doctoral education, and can be an additional route for students to demonstrate their motivation and aptitude for an advanced research degree, even in the absence of stellar degree results, which has relevance, too, for the awarding gap in the UK and the call for a more holistic, experience-based admissions process. Cliona Kelly, a first-generation Black PhD student at Aston University, makes the point that to be competitive for PhD places, students are often asked whether they have research experience, yet many of the existing programmes in the UK take place as intensives during the summer: "But that means taking the summer off and working for free, which most Black students can't afford to do. You'll be contributing to the rent at home, so doing a placement for no money just isn't possible" (Fazackerley 2019). Using research experience as a criterion for doctoral applications assumes equitably distributed access to opportunity but more typically represents some degree of financial privilege.

Creating more paid research placements, which do exist in small numbers at UCL, some of which are aimed at BAME students,[25] is one option to consider. Ensuring transparent and equitable access is key. Creating a centre for undergraduate research experience and integrating research collaborations with academic staff into undergraduate curricula would demonstrate the continuum from undergraduate to doctoral education, create valuable research opportunities for under-represented students, and empower a broader range of students to make informed decisions about their higher education choices.

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22 For example, the Association of Collegiate Schools and Planning offers a 'Pre-doctoral workshop for under-represented students of color' (https://www.acsp.org/page/PreDocWorkshop); In 2016 the USC Price School of Public Policy offered a 'Summer Pre-doctoral workshop for students of color' (https://priceschool.usc.edu/predoctoralworkshop/).

23 Led by the University of Leeds in partnership with Manchester, Sheffield, York, and Warwick. OfS 2017.

Knowledge Barriers	Recommendations
Information: • Lack of knowledge about PhD and ability to make informed decisions. • Inequity in how opportunities are communicated. • Lack of targeted advice or mentoring for talented/motivated students from under-represented backgrounds **Experience:** • Lack of research experience that affects likelihood of application, chances of successful application, and self-confidence	(i) Provide targeted early outreach and intervention programme;
	(ii) Train PGR ambassadors for a PhD information and mentoring programme;
	(iii) Offer application training workshops for under-represented groups;
	(iv) Explore how PhD opportunities are communicated and how current PhD students learnt about opportunities;
	(v) Work with PGT staff and personal tutors to increase understanding of barriers to PGR;
	(vi) Offer paid research placements for UG/PGT students under-represented in PGR;
	(vii) Explore summer bridging programmes for UG to PGT/PGR;
	(viii) Create a pre-doctoral programme: e.g. undergraduate pipeline fellows programme or talent scholarship scheme;
	(ix) Create a centre for undergraduate research experience.

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[24] LIDo DTP Pathway to PhD (https://mediacentral.ucl.ac.uk/Play/13496).

[25] For example, in 2018 LIDo launched its Research Experience Placements (REPS, summer internships paid at London Living Wage rate) targeted at the same BAME student group as the 'Pathway to PhD' and sponsored by an industry partner, Unilever.

3.5 Research culture and wellbeing barriers

UCL has one of the most progressive, dynamic, and successful research profiles in the world. The university's ambitious Research Strategy (2019) – which builds upon UCL's radical tradition of innovation, accessibility, and relevance – emphasises the role of research in understanding society "in order to transform it and to increase society's fairness and resilience." The Strategy also recognises that the future of UCL's research endeavours requires a "high quality and fulfilling environment" for its research students. The analysis and recommendations in this section focus on the ways in which this vision of UCL's research culture and its attendant values of collaboration, support, and inclusion, can contribute to dismantling barriers to participation for PGR students and, in particular, how a positive and inclusive research culture could enable and empower under-represented and under-served members of its community.

Even with UCL's research strengths and the breadth of activity across campus, the PRES 2019 results indicate that many current PGR students at the University do not feel integrated into their department's research culture. The reasons for this, reflected in the qualitative survey data, stem predominantly from their experiences of intellectual and social community, supervisory practice, availability of resources, access to opportunities, and pastoral support. Among the most common calls for improvement to the research degree experience are increases in funding support, careers guidance, and provision of information,[26] which are discussed in sections above. However, issues related to research culture and wellbeing include effective supervision,

access to resources, inclusive policies, and availability of mentoring and mental health support. Some students also mentioned experiences of discrimination within the university and others observed a lack of respect shown to PGRs by academic staff and professional services staff. Of 3,400 respondents to the UCL PRES, almost 25% indicated that they had considered leaving their degree programme.[27] Of all PGR students who withdrew from their studies in 2018-19, about a quarter were from BAME groups, 16% had disclosed one or more disabilities, and 40% were enrolled in part-time study.[28]

It is important to address these barriers to participation and success in relation to all students in the postgraduate research community. However, careful consideration must be given to the ways in which these issues can have a disproportionate impact on the academic progress, social experience, and personal wellbeing of under-represented, non-traditional, and historically marginalised students, as well as the ways in which inequities and discrimination can manifest in university policies – or their absence. These students' experience must inform the institutional interventions that can ensure a healthy and supportive research environment for all postgraduate researchers.

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26 Defined in the UCL PRES 2019 comments as degree expectations and requirements, skills training, and experience of programme induction and orientation.

27 It should also be noted that UCL's results here are more positive than the Russell Group, London universities, and the sector average.

28 126 withdrawals.

3.5.1 Exclusion

Disparate experience for women, students of colour, students with caring responsibilities, students with disabilities, LGBTQ+ students, and part-time students (this latter group including several of the former) has been recorded in several reports about the current state of research culture at UK universities. The data that emerges presents a persuasive case for their impact on doctoral student success and attrition.

A number of reports in recent years have also focused on the mental health of postgraduate research students and demonstrate the link between non-inclusive research environments and poor mental health (Guthrie at al. 2017; Vitae 2018; Cornell 2020). A Wellcome-funded review found that 80% of PhD students surveyed believed a research career could be lonely and isolating and over 40% reported symptoms of depression or stress-related problems. There is emerging evidence to suggest that BAME students face specific mental health challenges that are not addressed by universities' support structures (Arday 2018; Lynam et al. 2020; Vaughan & Murugesu 2020): intersectional factors of gender, social status, ethnicity, cultural values, and life stage are exacerbated by the conscious or unconscious discriminatory behaviours of other individuals and groups within the HE setting. These findings suggest that a more proactive and tailored response to wellbeing support is required for BAME students.

UCL's substantial community of international postgraduate students are also more vulnerable to developing poor mental health. Vitae's 2018 study of PGR wellbeing and mental health identifies a number of risk factors, including adjusting to a new culture, existing cultural mores, finance, visa issues, and potentially less access to family and friend support. An additional concern is that some students' association of wellbeing or mental health issues with stigma, weakness, or shame, and a reluctance to disclose personal challenges for fear that this "could result in suspension or termination of studies" and "losing the right to remain in the UK on their Tier 4 visas" (23). Jason Arday adds that for students who have adopted English as a second language, disclosure of mental and health concerns may be "misunderstood or misinterpreted" with "medical terminology sometimes providing further obstacles" (17).

UKCGE's Working Group for BAME participation in postgraduate research (2019) has observed a general lack of research related to the non-academic challenges experienced by doctoral students that distinguishes between different ethnicities, despite the heterogeneity in BAME groups. One of the few reports to focus on the Black PGR student experience is 'The Broken Pipeline' (Williams et al. 2019), which emphasises the need to discuss how Black PhD students are asked to operate in predominantly White working environments. The Wellcome Trust research culture survey (2020) suggests that covert discrimination and microaggressions are common for BAME PGR students and are experienced in the form of "being overlooked" for opportunities, ideas being dismissed, not being mentored by academic staff, and a sense of isolation. Many BAME respondents felt that "their experience of research culture (and their ability to succeed within it) was intrinsically worse than that of their White counterparts" (32). Arday states that "for ethnic minorities navigating the racialised terrain of the Academy, there is a dearth of culturally sensitive interventions" that allow BAME students to openly discuss their experiences "without fear of further discrimination, reprisal, or judgement" (2).

Equate Scotland's recent intersectional analysis of the experiences of women researchers in STEMM fields (2020) found that over half of BAME women would not feel confident reporting experiences of discrimination and 80% of BAME women did not believe enough is being done to create inclusive workplaces and educational institutions (6). The same report criticises the current focus of institutional interventions on single discriminations (e.g. only gender, only disability) and calls for more actions that target compound biases.

The Royal Society of Chemistry's recent study (2018) into the key barriers to women's progression in the sciences found that experiences of bias and exclusion in academic culture presented the clearest impediments, but the authors only consider diversity in terms of gender. Similarly, the Wise Campaign survey into women's representation in STEMM reports factors such as 'having to adapt to fit into a male-dominated workplace', as well as lack of recognition of achievements and lack of confidence that reduced their ability to succeed (2019: 11). These issues are not limited to research environments in the sciences, of course, and the Wellcome Trust survey, which reports that 29% of PhD participants had experienced gender discrimination, takes a somewhat broader view of the challenges for women in research culture, also adding that incidents of harassment are more common for female researchers and that women are less likely than men to believe their concerns will be acted on appropriately (2020: 28, 31).[29]

Discrimination experienced by women researchers can also be connected to the tension between their research and family demands, as women frequently bear the majority of caring responsibilities. This can also be a concern for students considering starting a family. A recent report from UCL's Student Union[30] states that 33% of PGRs at UCL are parents (though less reliable data is currently available to record the gender of students with dependents and students with other caring responsibilities). For student parents who complete their doctorate by enrolling part-time, consideration of resources which accommodate remote participation are of particular value, including online provision of Doctoral Skills Training and remote networking.

UCL's PACT network and the progressive work of Athena SWAN action plans over several years have done much to improve gender equality initiatives and the conditions for women research students and staff at UCL. Since 2011, the regulatory requirements that tie research funding to demonstrable progress in this area have proved to be an effective incentive to realizing some of the changes that are needed. At the same time, the Athena SWAN award process has only recently acknowledged the necessity to act at the intersections of gender and race and other protected characteristics (Rollock 2019).

Kalwant Bhopal, Professor of Education and Social Justice at the University of Birmingham, has called for regulatory bodies such as the Office for Students and UKRI to make the same demands of higher education institutions in the context of the Race Equality Charter. Diversity and inclusion initiatives that impact the experience of Black, Asian, and minority ethnic communities are more likely to make headway when the progress of institutional research is dependent on real and sustainable EDI changes (Inge 2018; UKCGE 2019b; Vaughan & Murugesu 2020).

Experiences of exclusion and discrimination are also reported by LGBTQ+ students. The lack of current research on this issue for PGR students makes it difficult identify the specific challenges to doctoral study for these groups and how their experiences may be inflected by sexual orientation and/or gender identity. The frequent absence of options to record non-binary identification is also a factor here. However, broader data analyses of LGBTQ+ experience in workplaces and educational institutions indicate that bias and non-inclusion are a routine occurrence.

Equate Scotland reports that 80% of LGBT women who participated in their survey experienced non-inclusive behaviours and 50% would be reluctant to report discriminatory practices. Other surveys have focused on the lack of awareness of LGBTQ+ issues among colleagues, a lack of visible support from academic staff, and the absence of policies that could improve the research environment, such as required training on transgender inclusion, bystander training, and training on inclusive language (Royal Society of Chemistry 2019; Stonewall 2020). In 2019, Warwick University promoted an information campaign to raise awareness about gender-neutral and preferred pronouns to ensure that the needs of students across the gender spectrum were recognised (Pronouns: Let's Get it Right).

Students with a disability or who manage accessibility issues have frequently called for policies that can improve their experience of inclusive education (OfS 2019a; OfS 2019b). UCL Students' Union produced a series of recommendations at the beginning of 2020, which includes widespread training and discussion of disability access and support services for all department staff. Some students also requested consistent provision of remote learning technologies. Best practice at other universities was also cited to recommend training a disability advisor in each Faculty, which would help to create a unified process for supporting disabled students' reasonable adjustments (Recommendation 2a-f).

As some students experience the effects of a non-inclusive research culture disproportionately, it is essential that these groups are better supported – and protected – as valued members of the postgraduate research community. It is also important that students from marginalised or under-represented groups are given a voice and are involved in the creation of services and resources. In surveys that focus on the creation of a positive and inclusive research culture, common themes emerge. One of these is a request for clear and safe reporting mechanisms. For postgraduate research students, the power dynamics of the student-staff relationship can make it even more challenging to report incidents of exclusion, harassment or discrimination, especially if these are subtle or unconscious microaggressions, or passively accepted as part of the working culture of the research space, or explained away a result of a highly competitive environment. Policies need to be clear for all members of the academic community and steps must be taken swiftly and fairly to increase confidence in the reporting system.

To make these policies clear and to support inclusive practice, another common recommendation is to increase the availability and dissemination of more detailed EDI information, beyond implicit bias training. Indeed, a recent assessment published by the Equality and Human Rights Commission reveals shortcomings in the effectiveness of such one-off training sessions (Atewolgun et al. 2018). The requirement of regular and more focused issues training (on anti-racism, for example) could be a formal requirement for all staff involved with postgraduate research, as well as the provision of resources to improve understanding of EDI barriers for PGRs and to support different groups of students. Currently, online implicit bias training is a requirement in UCL employment policy, but it is not tracked in a way that can ensure completion or compliance, which may lead to gaps in knowledge and preparedness for some staff.

29 Women respondents were more likely to have experienced bullying or harassment (49%) than men (34%).

30 Sessional Childcare Report for Students' Union UCL, February 2020.

3.5.2 Supervision

PhD supervision constitutes a key part of PGR students' experience and plays a significant role in their academic success. The quality of the supervisory relationship also has an important impact on students' wellbeing. In UCL's PRES 2019 data, survey respondents identified the most positive aspect of their research degree programme as "high quality supervision." They also identified the top aspect that could be improved as supervision. Currently, the PRES is the only mechanism available for students to offer feedback about their experiences of supervision as there is no standard appraisal process that asks for student evaluation. The free-text comments of the 2019 survey indicate that regular communication and clear expectations are most valued for PGR students, both of which are also strongly recommended in UKCGE's Good Supervisory Practice Framework.[31]

However, there is variety in the extent to which supervisors are aware of – or follow – guidelines for good practice. At UCL, all new supervisors are required to complete an online training module, but this does not include interactive engagement or allow prospective supervisors to ask questions or receive advice. The follow-up 'Developing as a supervisor' session encourages a focus on positive research culture but is only required for staff new to UCL. UKCGE has also recently launched a Research Supervision Recognition Programme,[32] which UCL has joined in its pilot development stage and which follows the model of HEA fellowship. Actively encouraging and incentivising supervisors with all levels of experience to participate would be a positive step. This Recognition Programme could also integrate EDI-informed reflection and be considered in promotion criteria in same manner as HEA fellowship. This could be particularly appropriate for academic staff who do more research than teaching.

Several discussions of research culture and PhD student experience also point to the ways in which the supervisory relationship can break down. Sometimes this is because of a lack of clarity about the candidate's and the supervisor's academic and pastoral capacities and priorities. As discussed above, many PhD students are vulnerable to anxiety and insecurity; this may often be a result of academic pressure and feelings of isolation (Vitae 2018), but different groups of students may also "experience difficulties unique to their group" and need to be supported in different ways (Arday 2018; Lynam et al. 2020). The UKCGE Good Supervisory Practice Framework suggests that supervisors need to "be aware of personal issues, particularly in relation to wellbeing and mental health, and be able to direct candidates towards the relevant professional services." They should also model an "appropriate work-life balance," as this is a recognised factor in non- or delayed completion and in "putting candidates off an academic career." However, supervisors may not consider themselves sufficiently trained

to offer this guidance. The Vitae report (2018) identifies a "lack of support for supervisors" in their pastoral role and a corresponding need for supervisors to feel that "their own wellbeing and mental health is a priority for the institution so they can be role models to their PGRs in healthy ways of working" (32). The report also acknowledges that many PGR students are reluctant to confide in their supervisors out of concern for how this could reflect on their ability to achieve their doctorate and the possible impact on their career prospects" (33).

Earlier this year, UKRI commissioned a project to explore supervisor's perceptions of their role in supporting the mental health and wellbeing of postgraduate researchers. In the meantime, one recommendation from Vitae's research into this issue is that universities monitor the extent of mental health issues for their PGRs and the demand for associated services. At UCL, this could in part be fulfilled by the inclusion of wellbeing questions in the 2021 PRES cycle and analysis of results by personal characteristics. A further recommendation is to provide dedicated wellbeing resources to the PGR community, particularly focusing on the appointment of ethnically diverse counsellors (Vitae 2018; Arday 2018; Cornell 2020; UCL REC 2020). Expert guidance and peer support should be available to supervisors to enhance their ability to identify PGR wellbeing issues, to share good practice, and to ensure they have information needed to refer students to specialised support services. UCL's postgraduate administrative structures also facilitate the possibility of additional support from Departmental Graduate Tutors, whose responsibilities include pastoral oversight of PGR students and liaison with Student Support and Wellbeing (SSW) services (UCL Graduate Research Degrees Code of Practice 2019-20).

In response to the differential needs of different groups of students, Jason Arday has suggested that HEIs establish a mentoring system to support PhD students' wellbeing. Several universities in the United States have established paid peer-mentoring for minority groups of PhD students, provided by senior postgraduate students or postdoctoral staff from under-represented groups (Council of Graduate Schools 2007). This serves as an effective mechanism for supporting wellbeing that is distinguished from - but can also supplement - academic supervision. It can also balance diversity in the student's support and strengthen community-building for marginalised students. A case study at the University of Maryland was particularly successful for new female students and students of colour, even when they were outside of the PhD student's department or programme: "Peer mentors are often able to decipher the unwritten rules of the institution or the dominant culture and can be more effective than faculty in sharing survival skills" (18).

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31 https://supervision.ukcge.ac.uk/good-supervisory-practice-framework/

32 https://supervision.ukcge.ac.uk/about-rsrp/

3.5.3 Community

Increasing diversity in doctoral education must include a dual focus on access and inclusion. Any progress made in tackling under-representation is dependent on how the University communicates the ways in which it values diversity and creates the conditions for each student to have a sense of belonging. The visibility of community is particularly important for prospective under-represented students, as they consider not just the match of an academic programme, but also look for signals that they will join an active, supportive network of colleagues and be included in opportunities for social and intellectual connection. The growth of the CDT/DTP cohort model has been a positive development in this regard. The Doctoral School has recently organised the 600 PGR codes at UCL into 100 programme areas in order to encourage a similar model across the university and to facilitate more cohort-based activities to build stronger PGR communities.

A further way in which the CDT/DTP model could lead in the creation of inclusive and anti-discriminatory research communities is to offer strands of their doctoral programme that focus on EDI-related issues. This approach, based in part on the philosophy of a decolonised curriculum, is currently part of the University of Bristol's CDT in Interactive Artificial Intelligence. The taught and supervised content of the programme offers EDI material on demographic bias in AI algorithms, discriminatory bias embedded in datasets, and the democratisation of AI technologies. The aim is to promote EDI awareness, to "enable CDT students to be ambassadors for good EDI practices within the discipline of AI in their future careers" and to encourage its doctoral graduates to shift industry culture by actively reducing "the inequality between different companies within the sector, enabling greater inclusion and more creative diversity of technical approaches, thoughts, and experiences in AI" (University of Bristol, Faculty of Engineering).

The opportunity to network with other postgraduate students and be included in department activities is critical to the experience of connection. So too is being able to interact with other under-represented peers outside of their academic field (Council of Graduate Schools 2007). Many of the reports addressing under-represented students in postgraduate education highlight the challenges of being ostracised or disconnected from peers and staff and of feeling unwelcome as a result of deliberate or unintended exclusion.

This can happen when institutional events and communications fail to address the needs or lived experience of its students (for example, considerations of physical access to spaces, ignorance of religious holidays, awareness of limited time resources for students with dependents, or lack of attention to neurodivergent learning needs). When student voices are required, attention should be given to ensuring that those voices are representative of the broadest range of backgrounds possible.

This is particularly important in doctoral introduction and orientation events, where setting an example of inclusivity establishes a positive tone. Work also needs to be done in departments to create welcoming and inclusive environments for all students and for these efforts to be explained and articulated in doctoral strategies. Adjustments needed to create that environment will differ from unit to unit. However, training, support, and consultation with PhD students may be necessary in many cases to guide departments in identifying where the problems reside.

Some universities have established postgraduate advisory councils to support such efforts. The University of Minnesota sponsors a Graduate Student and Postdoctoral Alliance for Diversity & Inclusion, which provides opportunities for postgraduate researchers and postdoctoral staff to collaborate on issues that support diversity and inclusion "through education, advocacy, networking, discussion, recognition, and celebration." At the University of Oregon, a Graduate Diversity Advisory Council provides guidance to the Doctoral School regarding the goals and vision for recruitment and retention of PhD students and also develops events and activities designed to recruit under-represented students and support their personal development and academic achievement. Princeton has created a Postgraduate Diversity Fellow position, recruited from the PGR community, whose role is to build inclusive community and act as a resource for current and prospective under-represented students.

Ultimately, students are best placed to provide insight into the PGR experience. Involving them as partners in discussion about changes and interventions, especially when they are the intended 'beneficiaries', will increase understanding of the barriers to access and success.

Research Culture & Wellbeing Barriers	Recommendations
Exclusion: • Non-inclusive and discriminatory experiences **Supervision:** • Lack of awareness of potential EDI barriers to doctoral education • Lack of attention to inclusive learning • Inconsistent pastoral role in supervisory relationship • Identifying mental health difficulties **Community:** • Ensuring inclusive and transparent opportunities for participation, consultation, and representation in governance	(i) Support research funders to require demonstrable progress with Race Equality Charter action plans as a pre-requisite to funding approval;
	(ii) Prompt EDI initiatives that focus on intersectional impact (e.g. female BAME)
	(iii) Promote a campaign for inclusive language and introduce pronouns usage as standard (she/her/hers; he/him/his; they/them/theirs);
	(iv) Recruit a trained disability advisor in each Faculty and embed accessibility (inc. BSL) in planning for conferences and public seminars;
	(v) Recruit ethnically diverse counsellors trained in BAME student needs in Student Psychological and Counselling Services;
	(vi) Offer alternative learning formats as standard and continue provision of UCL's online doctoral skills training, remote upgrade, and remote viva process;
	(vii) Invest in Continuing Professional Development on equalities and inclusion issues for all supervisors and PGR administrators (new and existing). Include an EDI training module about PGR student experience and promote ally and active bystander training, and training on anti-racism, racial microaggressions, white privilege.
	(viii) Encourage PhD supervisor participation in UKCGE's Research Supervision Recognition Programme;
	(ix) Train, support and recognise supervisors' and DGTs' role in identifying and supporting wellbeing issues among postgraduate researchers; provide support mechanisms for staff;
	(x) Include question section about PGR wellbeing in the next PRES (2021).

4. Conclusion

As this report demonstrates, the challenges of accessing and participating in doctoral education are multiple, complex, and often interrelated. Some of the barriers described above – financial insecurity, career uncertainty, isolation, and anxiety – may be experienced by any prospective or current PhD student. However, these are likely to be experienced disproportionately by many of the students who are currently under-represented and have been historically marginalised in postgraduate research environments. They are exacerbated by the deeply entrenched structural inequities, biases, and discriminatory practices that exist in society and in higher education.

The matrix of impediments and impacts for postgraduate research students is set against "a complex research ecosystem that needs the whole sector to commit to addressing enduring issues" (Cornell 2020). Advance HE's equality charters encourage institutions to drive forward cultural and systemic changes and UCL, as a world leader in research and innovation, has made a strong commitment to effective and sustainable change by attracting and supporting talent from all backgrounds. There are already ambitious targets to eliminate inequalities and poor outcomes for students from under-represented groups at undergraduate level and these must be met by similar efforts at postgraduate level.

This report's recommendations address a variety of circumstances and student needs. The impact of barriers experienced at the intersections of race, gender, disability, and socio-economic background are particularly acute and require attention to equity as well as equality. A number of these recommendations will make structures more accessible and inclusive over the longer term, but more immediate action is also needed to redress under-representation and injustice by providing targeted interventions for specific groups. The 2010 Equalities Act provides specific tools to do this under the 'positive action' provisions.

Significant obstacles experienced by already disadvantaged students on the pathway to doctoral study include the attainment gap as a disqualifier, financial need, availability of knowledge about the research environment and awareness of potential career paths, visibility of role models and access to mentorship, inclusive and equitable treatment, connection to community, and sufficient and appropriate support mechanisms and resources to manage their wellbeing. Among the measures proposed by this report, the following are proposed as those most likely to enact meaningful and sustainable change:

ACADEMIC BARRIERS

Develop revised admissions criteria for doctoral programmes, track pathways to PGR in order to provide further clarity about the student journey and offer targeted academic career mentoring.

FINANCE BARRIERS

Provide targeted funding and financial relief measures at PGR and PGT level for students underrepresented in PhD programmes.

CAREER BARRIERS

Increase focus on careers beyond academia and offer targeted mentoring and advocacy programmes for under-represented groups in the academic pipeline.

KNOWLEDGE BARRIERS

Ensure targeted and early outreach to under-represented groups, provide research experiences for undergraduate and PGT students, and create pre-doctoral bridging programmes.

RESEARCH CULTURE AND WELLBEING BARRIERS

Develop policies that ensure inclusive, well-informed, and supportive working environments, including anti-racism training, and provide comprehensive wellbeing support services adapted for a range of PGR student groups.

At UCL, there is a significant amount of good practice that promotes diversity and inclusion in the PGR experience. Communicating existing knowledge and understanding, as well as sharing examples of project aims and outcomes, are key to developing effective institutional practices and policies. It is important to create collaborative, cross-institutional forums designed to share and motivate best practice.

As evidenced in this report, there is much to be gained by drawing on the experiences and expertise of other institutions and by sharing UCL's existing and emerging PGR initiatives with other universities nationally and internationally. Continuing the work of this report, it would be beneficial for UCL to organise an international conference on "Overcoming Barriers to Doctoral Education," as well as a regular programme of internal PGR forums.

Communication and Outreach Barriers	Recommendations
Sharing best practice: • Building connection between UCL colleagues working in EDI, PGR, and WP • Outreach to UK and international HEIs • Leading the sector in dismantling the barriers to doctoral education	(i) Facilitate forums for sharing initiatives, good practice, and policies across UCL;
	(ii) Host a national conference on barriers to doctoral education.

"As evidenced in this report, there is much to be gained by drawing on the experiences and expertise of other institutions and by sharing UCL's existing and emerging PGR initiatives with other universities nationally and internationally. Continuing the work of this report, it would be beneficial for UCL to organise an international conference on "Overcoming Barriers to Doctoral Education," as well as a regular programme of internal PGR forums."

References

Adegoke, Y. (March 11 2020) Quotas alone can't fix diversity – it's time to go further. The Guardian. https://www.theguardian.com/lifeandstyle/2020/mar/11/quotas-alone-cant-fix-diversity-its-time-to-go-further

Advance HE (2018a) Does diversity of staff impact student outcomes in higher education?https://www.advance-he.ac.uk/knowledge-hub/reports-and-reviews

Advance HE (2018b) Equality in higher education: staff statistical report 2018.https://www.advance-he.ac.uk/knowledge-hub/equality-higher-education-statistical-report-2018

Advance HE (2019a) Equality in higher education: statistical report 2019. https://www.advance-he.ac.uk/knowledge-hub/equality-higher-education-statistical-report-2019

Advance HE (2019b) Postgraduate Research Experience Survey 2019. https://www.advance-he.ac.uk/knowledge-hub/postgraduate-research-experience-survey-2019

Advance HE (2019c) Equality in higher education: staff statistical report 2019. https://www.advance-he.ac.uk/knowledge-hub/equality-higher-education-statistical-report-2019

Advance HE (n.d.) Student Inequalities. Retrieved athttps://www.advance-he.ac.uk/guidance/governance/governance-and-edi/edi-challenges-higher-education/student-inequalities

Advance HE (February 2020b) Increasing Diversity: Tackling underrepresentation of protected groups in higher education. End of Programme Report. https://www.advance-he.ac.uk/knowledge-hub/increasing-diversity-tackling-underrepresentation-protected-student-groups-higher

Advance HE (March 2020c) Research Insight: Religion & Belief in UK Higher Education. https://www.advance-he.ac.uk/knowledge-hub/research-insight-religion-and-belief-uk-higher-education

Ali, A., Kohun, F. & Levy, Y. (2007) Dealing with social isolation to minimise doctoral attrition – a four stage framework. International Journal of Doctoral Studies, 2(1), 33-49. http://www.ijds.org/Volume2/IJDSv2p033-049Ali28.pdf

Arday, J. (2017) Exploring Black and Minority Ethnic (BME) Doctoral Students' Perceptions of a Career in Academia: Experiences, Perceptions and Career Progression. University and College Union (UCU): London: Creative Commons.https://www.ucu.org.uk/media/8633/BAME-doctoral-students-perceptions-ofan- academic-career/pdf/UCU_Arday_Report_-_June_20171.pdf

Arday, J. & Mirza, H.S. (Eds) (2018) Dismantling race in higher education: Racism, Whiteness and Decolonising the Academy. London: Palgrave Macmillan.

Arday, J. (2018) Understanding Mental Health: What Are the Issues for Black and Ethnic Minority Students at University? Social Sciences 7(10), 196.https://www.mdpi.com/2076-0760/7/10/196/pdf

Atewolgun, D., Cornish, T. & Tresh, F. (2018) Unconscious bias training: an assessment of the evidence for effectiveness. Equality & Human Rights Commission. Research Report 113.https://www.equalityhumanrights.com/sites/default/files/research-report-113-unconcious-bais-training-an-assessment-of-the-evidence-for-effectiveness-pdf.pdf

Bothwell, E. (June 27 2019) Workplace hostility pushes LGBT+ physical scientists towards exit. Times Higher Education.https://www.timeshighereducation.com/author/ellie-bothwell

Campbell, S., Macmillan, L., Murphy, R., Wyness, G. (2019) Inequalities in Student to Course Match: Evidence from Linked Administrative Data. London School of Economics and Political Science. Centre for Economic Performance.http://cep.lse.ac.uk/_new/publications/keyword.asp?keyword=economic

Campbell, S. (March 17 2020) Emergency flexibility for online learning is what disabled students have been seeking. Times Higher Education.https://www.timeshighereducation.com/blog/emergency-flexibility-online-learning-what-disabled-students-have-been-seeking

Cassuto, L. (January 14 2019) How to increase graduate school diversity the right way. The Chronicle of Higher Education.https://www.chronicle.com/article/How-to-Increase/245456

Cornell, B. (2020) PhD Life: the UK student experience. HEPI Report 131.https://www.hepi.ac.uk/2020/06/25/phd-life-the-uk-student-experience/

Council of Graduate Schools (2007) The University as Mentor: Lessons Learned from UMBC Inclusiveness Initiatives.https://cgsnet.org/cgs-occasional-paper-series/university-maryland-baltimore-county

Council of Graduate Schools (2010) Extending the Pipeline: Model Programs for Enhancing Diversity and Inclusiveness in Graduate School at the University of Memphis.https://cgsnet.org/ckfinder/userfiles/files/Paper_Series_Memphis_FrontMatter.pdf

Council of Graduate Schools (2015) Doctoral Initiative on Minority Attrition and Completion.https://cgsnet.org/ckfinder/userfiles/files/Doctoral_Initiative_on_Minority_Attrition_and_Completion_2015.pdf

Cousin, G. & Cureton, D. (2012) Disparities in Student Attainment (DiSA). York: Higher Education Academy. https://www.heacademy.ac.uk/system/files/projects/

Doward, J. (January 26 2020) Top universities 'not being chosen by low-income students'. The Guardian https://www.theguardian.com/education/2020/jan/26/poorer-students-opt-less-prestigious-universities

Duhs, R.M, Evans, J., Williams, P., Chaudhury, P. (2019) The early impact of initiatives to close attainment gaps at UCL. Compass: Journal of Learning and Teaching, 12(1).https://journals.gre.ac.uk/index.php/compass/article/view/1026

Equality Challenge Unit (2015) Academic Flight: how to encourage black and minority ethnic academics to stay in UK higher education. Research report.https://www.ecu.ac.uk/wp-content/uploads/2015/03/ECU_Academic-flight-from-UK-education_RR.pdf

Equality Challenge Unit (2016) ASSET 2016: experiences of gender equality in STEMM academia and their intersections with ethnicity, sexual orientation, disability and age.http://www.ecu.ac.uk/wp-content/uploads/2017/04/ECU_ASSET-2016-report_April-2017.pdf

Equate Scotland (2020) Women in STEM: an intersectional analysis of multiple discriminations.https://equatescotland.org.uk/wp-content/uploads/2020/05/Women-in-STEM-report-2.pdf

Fazackerley, A. (September 12 2019) 'Look at how white the academy is': why BAME students aren't doing PhDs. The Guardian.https://www.theguardian.com/education/2019/sep/12/look-at-how-white-the-academy-is-why-bame-students-arent-doing-phds

Gamlath, S. (March 10 2020) Tackling the BAME attainment at the Claude Littner Business School. HEPI Blog.https://www.hepi.ac.uk/2020/03/10/tackling-the-bame-attainment-at-the-claude-littner-business-school/

Giles, S. et al. (June 2020) Open letter concerning CDT and DTP student recruitment across the UK. Available via Inge, S. (June 23 2020) UKRI's PhD criteria 'biased against marginalised groups.' *Research Professional News. https://www.researchprofessionalnews.com/rr-news-uk-research-councils-2020-6-ukri-s-phd-criteria-biased-against-marginalised-groups/

Gov.uk (June 2019) Entrants at higher education providers with high, medium and low entry tariffs. https://www.ethnicity-facts-figures.service.gov.uk/education-skills-and-training/higher-education/entrants-at-higher-education-providers-with-high-medium-and-low-entry-tariffs/latest

Grove, J. (March 2 2017) Spot black talent sooner to boost academic diversity, says dean, Duke University's Valerie Ashby says institutions must be more 'intentional' about finding ethnic minority PhD candidates. Times Higher Education.https://www.timeshighereducation.com/news/spot-black-talent-sooner-boost-academic-diversity-says-dean

Guthrie S., Lichten, C., van Belle, J., Ball, S., Knack, A. & Hofman, J. (2017) Understanding mental health in the research environment: a rapid evidence assessment. The Wellcome Trust.https://www.rand.org/pubs/research_reports/RR2022.html

House, G. (May 2020) Postgraduate Education in the UK. HEPI Analytical Report 1.https://www.hepi.ac.uk/wp-content/uploads/2020/05/Postgraduate-Education-in-the-UK.pdf

HESA (2019) Who's Studying in HE? https://www.hesa.ac.uk/data-and-analysis/students/whos-in-he

HESA (2019b) Who's Working in HE? Personal Characteristics.https://www.hesa.ac.uk/data-and-analysis/staff/working-in-he/characteristics

HESA (2020a) Higher Education Student Statistics: UK, 2018/19: Student numbers and characteristics. https://www.hesa.ac.uk/news/16-01-2020/sb255-higher-education-student-statistics/numbers

HESA (2020b) Higher Education Graduate Outcomes Statistics: UK, 2017/18: Graduate activities and characteristics. https://www.hesa.ac.uk/news/18-06-2020/sb257-higher-education-graduate-outcomes-statistics/activities

Higher Education Commission (2012) Postgraduate Education: an independent inquiry by the Higher Education Commission. https://www.policyconnect.org.uk/hec/research/report-postgraduate-education

Hunt, L. (February 11 2019) You can't fix a leak by adding more water – Gender Equality in the Biosciences and the Pipeline Problem. LinkedIn.https://www.linkedin.com/pulse/you-cant-fix-leak-adding-more-water-gender-equality-hunt-phd/?mc_cid=07f3785139&mc_eid=ac8d15214c

Inge, S. (March 22 2018) Tie funding to tackling racial inequality, says professor. Times Higher Education.https://www.timeshighereducation.com/author/sophie-inge

Inside Higher Ed (February 2019) Diversifying Graduate Schools and the Faculty. https://www.insidehighered.com/content/diversifying-graduate-schools-and-faculty

LERU (June 2018) Delivering Talent: Careers of Researchers Inside and Outside Academia. Position Paper.https://www.leru.org/publications/delivering-talent-careers-of-researchers-inside-and-outside-academia

Levecque. K, Anseel, F., De Beucklaer, A., Van der Heyden, J., Gisle, L (2017) Work Organization and mental health problems in PhD students. Research Policy 46: 868-879.https://www.sciencedirect.com/science/article/abs/pii/S0048733317300422

Lynam, S., Lafarge, C., Milani, M., Worrell, M. (March 2020) Mental health and wellbeing in doctoral students from black, Asian and minority ethnic (BAME) backgrounds.https://www.bera.ac.uk/blog/mental-health-and-wellbeing-in-doctoral-students-from-black-asian-and-minority-ethnic-bame-backgrounds

Lythgoe, K. (February 26 2020) We need to invest in researchers in the long term. The Wellcome Trust. https://wellcome.ac.uk/news/we-need-invest-researchers-long-term

McKie, A. (November 27 2019) UK universities 'must be forced' to improve diversity. Times Higher Education. https://www.timeshighereducation.com/news/uk-universities-must-be-forced-toimprove-diversity

McPherson, C., Punch, S., Graham, E. (2017) Transitions from Undergraduate to Taught Postgraduate Study: Emotion, Integration, and Belonging. Journal of Perspectives in Applied Academic Practice 5(2).https://jpaap.napier.ac.uk/index.php/JPAAP/article/view/265

Moore, S., Neylon, C., Eve, M.P., O'Donnell, P. (2017) "Excellence R Us": university research and the fetishization of excellence. Palgrave Communications (3). https://www.nature.com/articles/ palcomms2016105?fbclid=IwAR2m1XOHDan Ct2CTsNH0zhr8ukP3hQy3KSSwbjZYt5lXrT7N4YJV4vomjTs

National Academy of Scientists (2014) The Postdoctoral Experience Revisited. https://www.ncbi.nlm.nih.gov/books/NBK268770/#sec_000044

OfS (2017) Progression to, and success in, postgraduate study by students from BAME and POLAR Quintile 1 & 2 backgrounds.https://www.officeforstudents.org.uk/media/36202171-1136-48df-8190-3d004f015638/leeds-project-poster.pdf

OfS (2018) The Effect of Postgraduate Loans.https://webarchive.nationalarchives.gov.uk/20180801134425/https://www.officeforstudents.org.uk/data-and-analysis/the-effect-of-postgraduate-loans/

OfS (2019a) Review of Support for Disabled Students in Higher Education in England. Institute for Employment Studies & Researching Equity, Access and Participation.https://www.officeforstudents.org.uk/media/a8152716-870b-47f2-8045-fc30e8e599e5/review-of-support-for-disabled-students-in-higher-education-in-england.pdf

OfS (2019b) Beyond the Bare Minimum: Are universities and colleges doing enough for disabled students?https://www.officeforstudents.org.uk/media/1a263fd6-b20a-4ac7-b268-0bbaa0c153a2/beyond-the-bare-minimum-are-universities-and-colleges-doing-enough-for-disabled-students.pdf

OfS (2020a) Differences in student outcomes: further characteristics. https://www.officeforstudents.org.uk/publications/differences-in-student-outcomes-further-characteristics/

OfS (2020b) How do student outcomes vary by disability status?https://www.officeforstudents.org.uk/data-and-analysis/differences-in-student-outcomes/disability/

OfS (2020c) Supporting black, Asian and minority ethnic students during the coronavirus pandemic. Online webinar, 5 June 2020.https://www.officeforstudents.org.uk/news-blog-and-events/events/supporting-black-asian-and-minority-ethnic-students-during-the-coronavirus-pandemic/

Olonisakin, F. (June 12 2020) Universities can and should do much more to address systemic racism. Times Higher Education.https://www.timeshighereducation.com/opinion/universities-can-and-should-do-much-more-address-systemic-racism

Pandit K. (2013) International Students and Diversity. In: Alberts H.C. & Hazen H.D. (eds) International Students and Scholars in the United States. Palgrave Macmillan, New York.

Pásztor, A. & Wakeling, P. (2018) All PhDs Are Equal but ... Institutional and Social Stratification in Access to the Doctorate. British Journal of Sociology of Education 39.7 (2018): 982-997.https://www.tandfonline.com/doi/abs/10.1080/01425692.2018.1434407

Plotina (2019) Providing staff members with useful tools that will help them using an inclusive language: Adopting gender neutral pronounshttps://www.plotina.eu/adoption-gender-neutral-pronouns-warwick/#1571055341720-dfa9392f-7645

Poku, C. (December 2019) Career intelligence: how to succeed as a black PhD student. Times Higher Education.https://www.timeshighereducation.com/news/career-intelligence-how-succeed-black-phd-student

Princeton (accessed 2020) Princeton Graduate Scholars Program.https://gradschool.princeton.edu/diversity/grad-scholars-program

Rollock, N. (February 2019) Staying Power: the career experiences and strategies of UK Black female professors. London: UCU. https://www.ucu.org.uk/media/10075/staying-power/pdf/ucu_rollock_february_2019.pdf

Royal Society (2018) Research Culture: Changing Expectations. Conference Report. https://royalsociety.org/-/media/policy/projects/changing-expectations/changing-expectations-conference-report.pdf

Royal Society of Chemistry (2018) Breaking the Barriers: Women's retention and progression in the chemical sciences.https://www.rsc.org/new-perspectives/talent/breaking-the-barriers/

Royal Society of Chemistry (2019) Exploring the Workplace for LGBT+ physical scientists.https://www.rsc.org/new-perspectives/talent/lgbt-report/

Runnymede (March 26 2020) Coronavirus will increase race inequalities. Zubaida Haque. https://www.runnymedetrust.org/blog/coronavirus-will-increase-race-inequalities

Russell Group (2020) Pathways to Potential: how universities, regulators and government can tackle educational inequality.https://russellgroup.ac.uk/media/5858/pathways-for-potential-full-report-may-2020.pdf

Sørensen, H. T. (2016) I-determinants for a successful PhD or postdoctoral outcome. Clinical Epidemiology, 8: 297–303.https://pubmed.ncbi.nlm.nih.gov/27574466/

Stonewall & Britain Thinks (2020) Shut Out: The experiences of LGBT young people not in education, training, or work.https://www.stonewall.org.uk/system/files/shut_out_2020.pdf

The Economist (December 2016) Why doing a PhD is often a waste of time: the disposable academic.https://medium.economist.com/why-doing-a-phd-is-often-a-waste-of-time-349206f9addb

Thomas, L. (2012) Building Student Engagement and Belonging at a Time of Change in Higher Education: final report from the What Works? Student Retention & Success programme. London: Paul Hamlyn Foundation. https://www.phf.org.uk/wp-content/uploads/2014/10/What-Works-report-final.pdf

UCL (2020) Athena SWAN submission. Office for Equality, Diversity and Inclusion.

UCL (2019) Graduate Research Degrees Code of Practice 2019-20. https://www.grad.ucl.ac.uk/codes/Graduate-Research-Degrees-Code-of-Practice-1920.pdf

UCL (February 2017) Enhancing Research Student Mental Wellbeing at UCL. Research Student Mental Wellbeing Working Group. Report.https://www.grad.ucl.ac.uk/research-student-mental-wellbeing-working-group/Enhancing-ResStudent-Mental-Wellbeing.pdf

UCL (2019) PRES results.

UCL (2018) Race Equality Charter Student Survey https://www.ucl.ac.uk/human-resources/news/2018/aug/race-equality-staff-survey-have-your-say

UCL (2019) Research Strategy. OVPR. https://www.ucl.ac.uk/research/strategy-and-policy

UCL (October 2019) Structurally Unsound. Exploring Inequalities: Igniting research to better inform UK policy (UCL/Resolution Foundation).https://www.ucl.ac.uk/grand-challenges/ucls-six-grand-challenges/justice-and-equality/exploring-inequalities/structurally-unsound

UCL Students' Union (2019) Student Priorities for Education Report: Trends in Student Feedback.http://studentsunionucl.org/sites/uclu.org/files/u304849/documents/student_priorities_for_education_report_2019_0.pdf

UCL (2020) Race Equality Charter submission. Office for Equality, Diversity and Inclusion.

UCL Students' Union (January 2020) Disability Discrimination Faced by UCL Students and Recommended Measures.http://studentsunionucl.org/articles/disability-discrimination-faced-by-ucl-students-and-recommended-measuresUCL (May 2020) Faculty Doctoral Planning Reports 2019-2020.

UKCGE (2019a) BAME Participation in Postgraduate Research: Thematic Bibliography. http://www.ukcge.ac.uk/media/download.aspx?MediaId=2218

UKCGE (2019b) Q&A on Widening Participation with Professor Paul Wakeling. http://www.ukcge.ac.uk/article/widening-participation-qa-paul-wakeling-416.aspx

UKCGE (June 2020) Access and Participation of Black, Asian and Minority Ethnicities in UK Postgraduate Research. Policy Briefing. http://www.ukcge.ac.uk/article/bame-pgr-access-participation-459.aspx

UKRI (2019) Diversity in Research and Innovation. https://www.ukri.org/about-us/equality-diversity-and-inclusion/diversity-in-research-and-innovation/

UKRI (2020a) Diversity results for UKRI funding data 2014-15 to 2018-19.https://www.ukri.org/files/about/ukri-diversity-report/

UKRI (2020b) Postgraduate Researchers.https://re.ukri.org/research/postgraduate-researchers/

UKRI & Advance HE (2019a) Equality, diversity and inclusion in research and innovation: UK review. Kevin Guyan and Freya Douglas Oloyede. https://www.ukri.org/files/final-edi-review-uk/

UKRI & Advance HE (2019b) Equality, diversity and inclusion in research and innovation: international review. Jess Moody and Amanda Aldercotte. https://www.ukri.org/files/final-edi-review-international/

University of Bristol (accessed 2020) UKRI Centre for Doctoral Training in Interactive Artificial Intelligence. Faculty of Engineering.http://www.bris.ac.uk/cdt/interactive-ai/equality-diversity-and-inclusion/

University of Glasgow (accessed 2020) Diversity and Inclusion in the PGR Experience.https://www.gla.ac.uk/research/ourresearchenvironment/prs/pgrdiversityandinclusion/

University of Minnesota (accessed 2020). Alliance for Diversity & Inclusion.https://grad.umn.edu/node/561

University of Oregon Graduate School (accessed 2020) Diversity.https://www.google.com/search?client=safari&rls=en&q=U.+Oregon+Graduate+School&ie=UTF-8&oe=UTF-8

University of Warwick (accessed 2020) Pronouns: Let's Get It Right. https://warwick.ac.uk/services/equalops/getinvolved/initiatives/lgbtua/getpronounsright

UUK International (January 2020) Supporting International Graduate Employability: Making Good on the Promise.https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2020/Supporting-international-graduate-employability.pdf

Vaughan, A. & Murugesu, J. A. (June 23 2020) Minority scientists still face many forms of institutional racism. New Scientist.https://www.newscientist.com/article/mg24632882-500-minority-scientists-still-face-many-forms-of-institutional-racism/

Vitae (May 2018) Exploring the wellbeing and mental health and associated support services for postgraduate researchershttps://re.ukri.org/documents/2018/mental-health-report/

Vitae (September 2019a) Do researchers' early careers have to be precarious? https://www.vitae.ac.uk/impact-and-evaluation/what-do-researchers-do/do-researchers-careers-have-to-be-precarious-research-article.pdf/view

Vitae (September 2019b) The Concordat to Support the Career Development of Researchers. https://www.vitae.ac.uk/policy/concordat

Vitae (accessed 2020) Every Researcher Counts.https://www.vitae.ac.uk/doing-research/every-researcher-counts-equality-and-diversity-in-researcher-careers/every-researcher-counts-project

Wakeling, P. (2015) Programme analysis of HEFCE's postgraduate support scheme – final report to ESRC and HEFCE. https://webarchive.nationalarchives.gov.uk/20180405124947/http:/www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/Independentresearch/2015/Programme,analysis,of,PSS/HEFCE2015_pssfinal.pdf

Wakeling, P. & Hancock, S. (2019) 21st Century PhDs: Why we need better methods of tracking doctoral access, experiences and outcomes. Research On Research Institute. https://figshare.com/articles/21st_Century_PhDs_Why_we_need_better_methods_of_tracking_doctoral_access_experiences_and_outcomes/9917813

Wakeling, P. & Kyriacou, C. (2010) Widening participation from undergraduate to postgraduate research degrees: a research synthesis. The University of York. https://esrc.ukri.org/files/public-engagement/public-dialogues/full-report-widening-participation/

Wellcome Trust (2020) What Researchers Think About Research Culture. https://wellcome.ac.uk/reports/what-researchers-think-about-research-culture

Williams, P., Bath, S., Arday, J. & Lewis, C. (Eds.) (September 2019) The Broken Pipeline – Barriers to Black PhD Students Accessing Research Council Funding. Leading Routes. https://leadingroutes.org/mdocs-posts/the-broken-pipeline-barriers-to-black-students-accessing-research-council-funding

Wise Campaign & Amazon (2019) Making a difference: why women in STEM become innovators. https://wisecampaign.scdn3.secure.raxcdn.com/wp-content/uploads/2019/03/Making-a-Difference-why-women-in-STEM-become-innovators.pdf