

Structures and Strategy in Doctoral Education in the UK and Ireland

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Foreword

By Professor Chris Smith

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There are around three quarters of a million taught and research postgraduate students in the UK and Ireland, itself an extraordinary statistic. The aim of the 2021 UKCGE survey was to produce an authoritative national overview of how postgraduate/research degree provision is organised within higher education institutions. This exceptionally helpful report builds on previous surveys to develop a longitudinal approach to an important but fragile part of our skills landscape.

Over my lifetime, the mechanisms, demographics, purposes and outcomes of postgraduate study in the UK and beyond have changed significantly. The transformed funding landscape and the reducing role of central funding, the division and proliferation of taught masters and professional doctorates, and the increase of postgraduate study outside pre-92 universities have been swift and far-reaching. The drivers for this change are complex. At one level, we have a significantly more open and inclusive system, and a recognition that postgraduate skills have wide relevance and significance far beyond the academic world. There is a need for postgraduates, and 77% of surveyed institutions aim to increase research postgraduates. In some subjects, it is the case that labour demand outstrips supply, but largely for research postgraduates where growth in the UK is sluggish. Yet the increase in other parts of the postgraduate system has been the result of a marriage of the desire on the part of graduates for differentiation in a crowded labour market and on the part of universities for income. The more or less complete separation of taught masters and doctoral degrees in both funding and institutional structures, revealed in this study, is a symptom of that rethinking.

It is also a symptom of the intense pressure on postgraduates and degree providers. Some of this is structural. The widespread removal of funding from the taught masters level is recognised to be a massive barrier to access and opportunity. There has been a drive across past decades to limit the time taken to get a PhD, but many postgraduates have to juggle academic research with skills training and paid labour. There are differences between disciplines, but over half of students take longer than four years (full time equivalent) to complete, implying some period of unfunded study. And for all that we claim that postgraduates are important, the focus on mental health and wellbeing identified in the report is not merely the outcome of a more caring system, it is also a reflection of the exceptional toughness of the environment.

The survey is not just a study of long term change. It also shines a light on two massive upheavals, whose consequences we have only begun to understand. One is the fallout of Brexit and the impact on fees and mobility. This needs to be understood within larger trends in mobility, and the rise of new providers and new demographics of demand. The other is the impact of the COVID-19 pandemic. There are intriguing intersections – is one answer to mobility challenges the rise of online and international PhD supervision? Yet no degree of intellectual speculation can take away the devastating impact on a generation of students who found access to fieldwork, laboratories, libraries, archives and collections massively and almost instantly reduced, as well as suffering personally and collectively. There are lessons for all of us to learn.

At the same time, even in an account of change, the report highlights much that has not changed as quickly. Mixed pre- and post-92 doctoral consortia are rare. Funding is heavily weighted to pre-92 institutions. Equality, diversity and inclusion among postgraduate communities remain significant challenges, and ones which we have to work together to address. There is still, I think, a surprisingly high level of sole supervision, not much stretch beyond joint supervision, and the doctorate remains the only degree, and perhaps the only educational qualification in the UK, whose assessment has remained largely unchanged for half a century or more.

The value of this report lies not only in its comprehensive data collection and analysis. It also comes from the sparks that are generated from the frictions which are revealed. The prioritisation of people and culture, including through the government's R&D People and Culture Strategy, cannot but raise the issues of the level of stipends, degree of support for students and indeed their supervisors, and the challenge of creating inclusive communities of postgraduates. One of the most interesting challenges noted in the report is the rise of postgraduate study connected specifically to social justice. Ensuring this is conducted by as well as about or for those who have been historically disadvantaged is essential for this to produce valid and credible outcomes.

Ultimately, the largest challenge is ensuring that funding works in a context where 81% of graduate schools are institution wide and there is a significant demand for collaboration beyond individual universities and into business, industry and third sector organizations. This is a shared problem and the old solutions may no longer be fully fit for purpose, which is why the work around a New Deal for postgraduates is important and why this tour d'horizon is so timely. It is incumbent on all of us to allow the sparks which are generated by this valuable report to ignite the long overdue debate about how to build an exciting, fair and inclusive postgraduate

environment, and one which serves the needs of society, degree providers, and postgraduates themselves.

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January 2022

Headline Findings

These are the survey’s headline findings - looking at the structure, strategy, culture and organisation in doctoral education institutions across the UK:

- No structures to support postgraduate taught students (PGT);
- Shift in priority and key metric from quality to student satisfaction;
- Shared aspirations to grow postgraduate research (PGR) population despite current decline in academic jobs;
- Less than 50% have diversity as key metric and it does not appear in top five priorities.



75% Of respondents have a graduate school/doctoral college or similar structure.

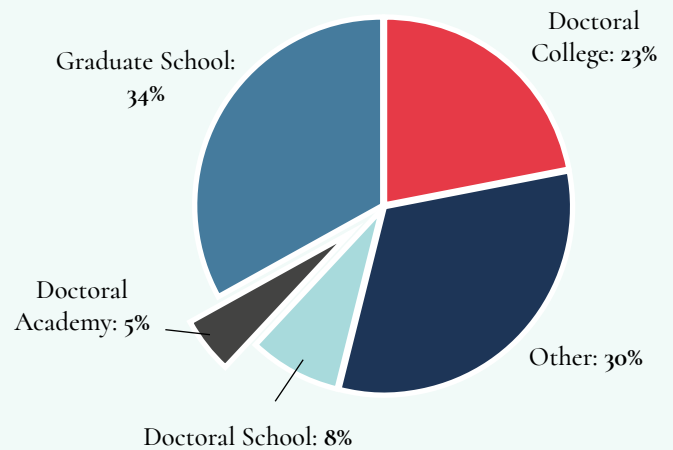
100% support PGRs, 41% support ECRs, and 27% support research staff.

ECR support up from 17%

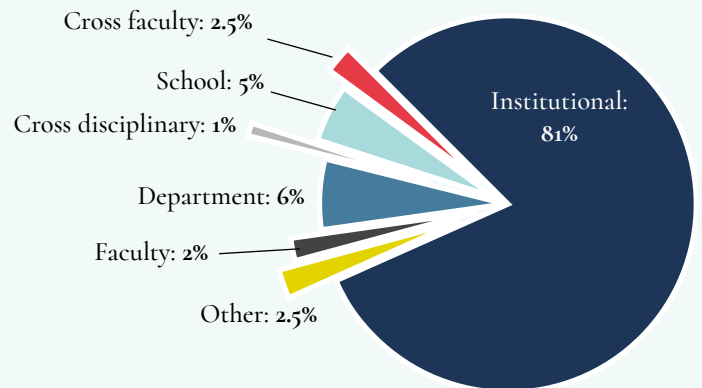
Only 9% support PGT students - a significant fall since 2015.

Down from 53%

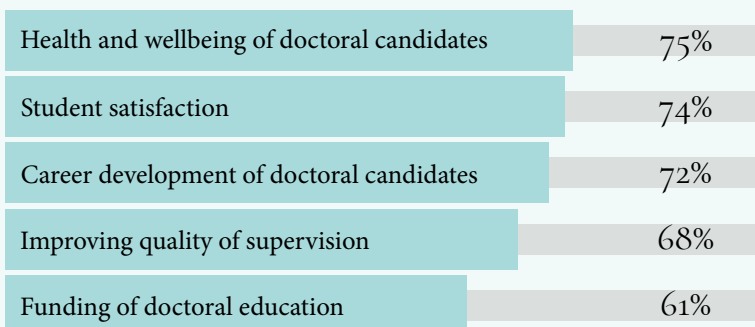
Structural Types 2021



Organisational Scope



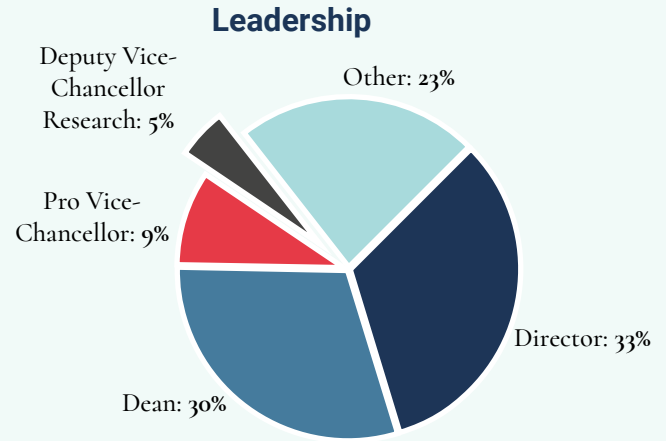
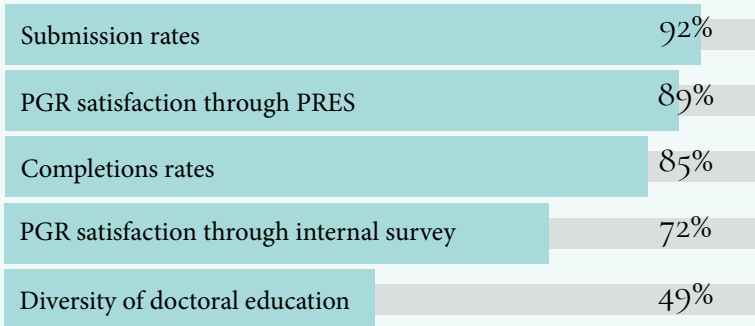
Top 5 Priorities



Least ranked top 5 priorities

- Open access/Open science: 23%
- Societal engagement with doctoral candidates: 23%
- External marketing for doctoral programmes: 35%
- Industry partnerships with doctoral education: 40%
- Research ethics: 42%

Top 5 Measurables to Evaluate Doctoral Education (marked as always or usually)

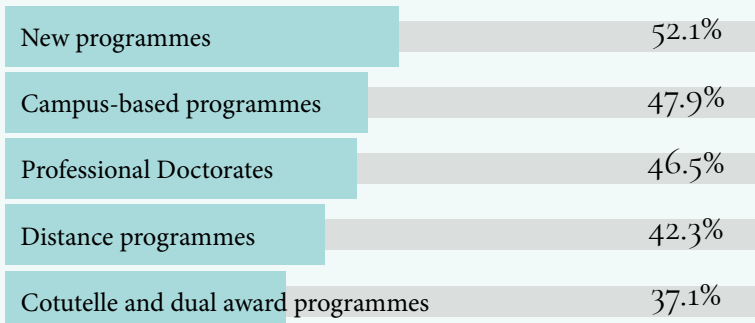


Growing PGR Numbers

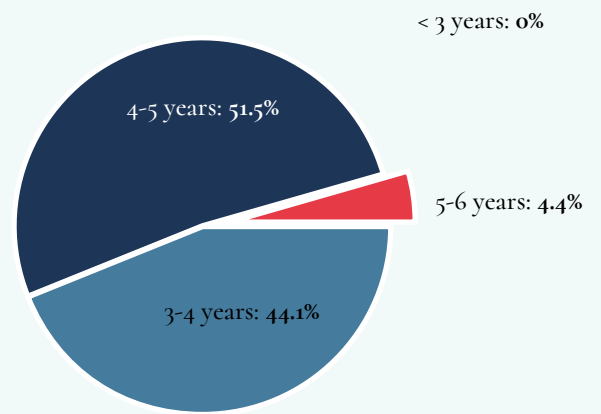


Where the percentage increase was specified, the mean average increase for the doctoral population was 53% (over 5 years) and 30% for MRes.

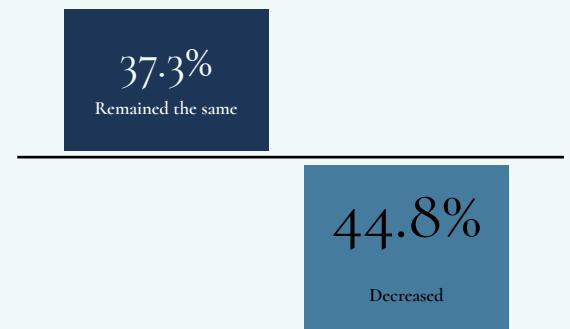
Growing doctoral population through development of:



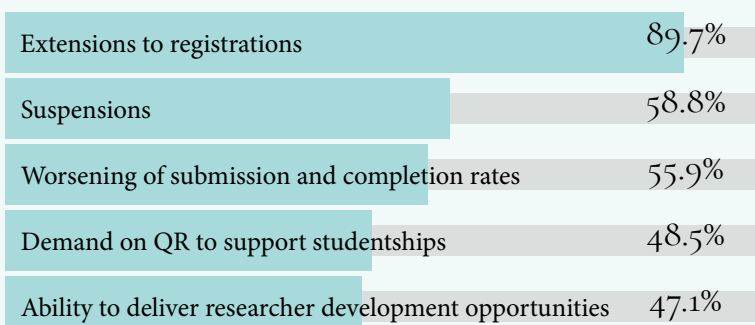
Average Completion Times



Over the past five years, completion times have:



Main Covid-19 Impacts Reported



Executive summary

This study of the structures and strategies which shape doctoral education in 2021 in the UK and Irish higher education institutions presents a broad overview of trends in national and international doctoral policy, national and international postgraduate population data and the findings of the 2021 survey.

165 research degree-awarding institutions in the UK and Ireland were invited to participate in the 2021 survey. 74 responses were elicited, representing a 45 % response rate. A web search of the 91 non-responding institutions was subsequently undertaken to provide as broad a picture as possible of the current landscape of structures supporting doctoral education.

Overall growth in postgraduate populations

Overall postgraduate provision in the UK and Ireland, which includes taught postgraduate students (PGT) and postgraduate researchers (PGR) has varied considerably since the 2015 survey. In 2013/14, HESA recorded the total number of postgraduate students in the UK as 539,440 (427,935 PGT and 111,495 PGR). Their latest statistic for 2020/21 shows an overall increase to 743,340 (628,940 PGT and 114,405 PGR). The HEA in Ireland has recorded growth in both taught and research postgraduates from 17,112 PGT and 9280 PGR in 2013/14 to 41,314 PGT and 11,199 PGR in 2020/21. Increases are predominantly focused within the full-time student cohort.

The increase in the UK PGR population between 2013/14 and 2020/21 comprises a period of limited but steady growth from 2013/14 to 2018/19, followed by a downturn between 2018/19 and 2019/20, before

a return to growth in number in 2020/21 (HESA).

Survey responses suggested a clear aspiration to continue the growth in the UK PGR population observed in 20/21 in the coming years. The projections for growth demonstrated a desire for significant increases in doctoral population size. Where the percentage increase was specified, the mean average increase is 53% over five years (median 27.5%).

Small decrease in international postgraduate researchers

There has been 1.6% decrease in the proportion of non-UK domiciled PGR in the UK from 42.5% in 2013/14 to 40.9% in 2020/21 (HESA).

Data suggest that emerging economies that have previously invested significantly in overseas scholarships are increasingly turning their focus to expanding their national production of doctoral awards, which might have implications for future growth.

Female postgraduates outnumber male

The overall gender balance across all postgraduate programmes in the UK has increased significantly in favour of women, growing from 51.5% in 2013/14 to 57.5% in 2020/21. This is largely due to the increase in women undertaking taught postgraduate programmes. 58.9% of UK PGT students are women. The gender balance across all postgraduate programmes in Ireland shows a similar trend, rising from 54% women postgraduate enrolments in 2013/14 to 58% in 2020/21.

Women slightly outnumber men amongst postgraduate researchers in the UK, with 50% women, 49% men and 1% other reported for 2020/21 (HESA). In Ireland HEA data shows 53% of the PGR population are women and 47% are men.

Increase in participation from racialised groups

UK PGR population data (HESA) shows a 3.4% increase in the representation of racialised groups at sector level from 15.8% in 2013/14 to 19.2% in 2020/21. Ethnic diversity is still significantly higher as a percentage of the PGR population at universities outside of the Russell Group. These universities have also seen a higher percentage increase in representation from racialised groups since the last report, although overall PGR population numbers are much smaller.

The remit of graduate schools or equivalent structures is changing

In 2021, the majority of responding universities have an organisational structure which supports postgraduate education. This has increased from 70% in 2015 to 75% in 2021.

In a shift from 2015, the predominant organisational

model is now an institution-wide structure. It remains most frequently called a Graduate School but titles such as Doctoral School, College or Academy are increasing in popularity. The predominant leadership model is Director (1.0 full-time equivalent, professional services post).

All graduate school or equivalent structures support postgraduate researchers. However, only 9% of survey respondents indicate that the remit of their graduate school or equivalent now includes taught Masters students (down from 53% in the 2015 survey).

The remit of graduate schools or equivalent structures has expanded into research staff, with 41% of survey respondents reporting support for early career researchers specifically and 27% for research staff more broadly.

Implementation of the research concordat was a top-three strategic priority for only 45% of respondents where the graduate school or equivalent structure had a reported remit for early career researchers or research staff.

There has been a harmonisation of focus amongst graduate schools or equivalent. Common priorities revealed by the survey responses include: improving the quality of graduate education, the health and wellbeing of students, the student experience, and sharing good practice in supervision. Common areas of responsibility were generic skills training programmes, quality assurance, and monitoring of student progress.

There is a trend towards convergence in the design and structure of doctoral programmes that has been noted in Europe (Hasgall et al., 2019) and attributed to globalisation of higher education over the past decade. India and regions in Africa provide recent

examples of large-scale national/transnational initiatives to review quality and standards and improve standardisation of doctoral provision, which has the potential to facilitate collaboration across programmes and doctoral mobility.

In the UK many cross-institutional graduate school structures highlighted in the previous report, such as the Scottish Graduate School for Arts and Humanities, the Marine Alliance for Science and Technology in Scotland, and the Doctoral Training Alliance have remained stable and have consistently attracted doctoral funding over the period since the last report. The White Rose University Consortium is an example of a broader-based cross-institutional partnership that has also provided the infrastructure for a successful portfolio of funded cohort-based doctoral training programmes.

Increase in international collaborations

The number of flagship international cotutelle and dual award programmes in UK and Ireland has increased with further work required to understand the full extent of new international doctoral collaborations.

There is a growing number of professional doctorates and industrial partners in doctoral research in Europe. The EUA-CDE report (Hasgall et al., 2019) highlighted doctoral collaborations with business and industry partners as one of the key strengths of European doctoral education. There is a lack of comparable data in other countries such as Australia or the United States and in the UK. Further work is required to explore how data on professional doctorates and collaborations with business, industry and third sector partners are captured and understood.

New guidance and investment in initiatives to support mental health and well-being amongst postgraduate researchers

The survey findings highlight pandemic-driven innovation in modes of delivery and in support for mental health and well-being.

Mental health and well-being of doctoral candidates is not only a major policy preoccupation in the UK; research in the United States, Canada, Belgium as well as a recent global survey have shown high levels of isolation, competition, long work hours, and discrimination amongst doctoral communities. This has catalysed new guidance and investment in this area.

Equitable access to funding for doctoral education is a key concern

There is growing recognition of the potential of doctoral education to enable a fairer and more just society in policy and practice, with examples of this trend in the UK, South Africa, Australia and the European Union.

The equality, diversity and inclusion agenda has sharpened the focus on equitable access to research council funding, which remains a concern amongst some survey respondents. Access to funding for studentships was reported as a top-three issue in the free text responses from all institutions to questions on the impacts of Covid, major challenges facing doctoral education currently, and major changes in the next five years.

Changes to funding was the top response to the question about what national development in doctoral education respondents would like to see in the next 5-10 years.

About the authors

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Rebekah is Director of the Doctoral School at Nottingham Trent University. She is Principal Investigator on two major projects in the field of doctoral education. Equity in Doctoral Education through Partnership and Innovation seeks to increase participation of racialised groups in doctoral education through partnership with the NHS, the development and piloting of a competency-based postgraduate research (PGR) admissions framework and the delivery of a bespoke coaching programme for PGR, supervisors and professional services staff who support doctoral education. Rebekah was an executive committee member and trustee of the UKCGE for six years and chaired the UKCGE National Working Group on Diversity and Sustainability of Organisational Structures for Doctoral Provision. She is a current member of the UKRI Bioscience Skills and Careers Strategy Panel and was an expert panel reviewer for the UK Concordat for Researchers (2019). Rebekah has published recently on doctoral mobility and doctoral progression through a critical mobilities lens.

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Acknowledgements

The authors would particularly like to thank the higher education institutions who responded to the survey.

Thanks are also extended to:

European Universities Association Council for Doctoral Education (EUA-CDE) for permitting the reproduction of infographics for the purpose of this report;

Higher Education Statistics Agency (HESA) in the United Kingdom and the **Higher Education Authority** (HEA) in Ireland for the national statistics used in this report;

Professor Julie **Sheldon**, Dr Sherran **Clarence**, and Dr Tanvir **Ahmed** for reviewing and providing comment and thought prior to publication;

Angus **Burns**, Kate **Payne** and Owen **Gower** at the UKCGE for supporting and undertaking desk-based research, circulating the survey and bringing the report to publication, and to Ian **Covey** (UKCGE) for the design and layout.

We express our sincere thanks and appreciation to Professor Christopher **Smith** from the Arts and Humanities Research Council for reading the report and writing a considered and balanced foreword.

Finally, thank you to the wider membership of the UK Council for Graduate Education (UKCGE) for contributing to the institutional survey responses and for engaging freely in discussions at network meetings and events over the past year. Your contributions have shaped the discourse on doctoral education and have framed some of the new areas of focus in this report.

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1. Introduction

About the UKCGE and this series of reports

The UK Council for Graduate Education (UKCGE) was formed in 1994 ‘to promote the interests of graduate education’. In 1994 the UKCGE conducted a national survey which fed into the first national report on the emergence of graduate schools in the UK. This report reviewed graduate schools, assessed their advantages and disadvantages, discussed alternative organisational models, and provided guidance on the implementation of this new structure (UKCGE, 1995). A further five reports over the last three decades have subsequently charted the development of organisational structures such as graduate schools which support postgraduate education, mapping their number, distribution and remit.

As taught masters programmes have become an increasingly rare area of responsibility for graduate schools or equivalent structures – just 9% now support postgraduate taught students – the reports have gradually expanded their focus on doctoral education. The 2015 and 2021 reports go beyond the original scope of the series, which was mainly focused on gaining an understanding of the development of graduate schools. These most recent reports consider in more detail trends in national and international policy and practice in doctoral education, postgraduate researcher population data, and institutional doctoral strategy, alongside the organisational structures which enable (or sometimes constrain) them. The 2022 report draws on data from the 2021 UKCGE survey with some comparative data from the 2015 UKCGE and 2019 EUA-CDE surveys. Postgraduate researcher population statistics are taken from Higher Education Statistics Agency (HESA), Higher Education Authority (HEA), the Organisation for Economic Co-operation and Development, and a

number of other national agencies. Contemporary academic and policy literature is used to provide an overview of current national and international trends in doctoral education.

Terminology

The 2015 report suggested the start of a trend away from using the term ‘Graduate School’. The 2021 survey results show that this trend has continued. However, still less than half (35%) of institutional structures which support postgraduate students are called Doctoral College/School/Academy. Therefore, this report will use “graduate school or equivalent structure” as the generic phrase to describe all institutional structures which support postgraduate students, including Doctoral Colleges, Doctoral Schools, Doctoral Academies, Researcher Academies and other.

Informed by the literature on race in academic spaces, including the work of Heidi Mirza and Jason Arday, and contemporary discourse within groups such as Black British Academics, this report uses the term ‘racialised groups’ as a clearer articulation of marginalisation and prejudice relating to existing racial hierarchy rather than ‘BAME’ which can be seen as focusing on and homogenising ethnic background, unless citing other sources of data or literature.

Key Trends 1994 - 2015

Graduate schools or equivalent structures have grown exponentially over the past three decades to

be present in 75% of responding higher education institutions across the UK and Ireland in 2021.¹ At the same time, their areas of focus and key activities have evolved significantly. The 2015 report identified three distinct periods between 1994 and 2015. These were: the establishment of graduate school structures; consolidation and regulation of quality; and collaboration and diversification in models of doctoral education and in the doctoral population. Survey findings from 1994 to 2015 suggested an initial focus on quality, improving submission and successful completion rates for research degrees, addressing marginalisation of postgraduate work during the years of expansion of undergraduate programmes, and the centralised provision of skills training to meet the needs of the nascent agenda on doctoral employability. Growing competition from Europe, Australia and Canada for postgraduate registrations was also a concern early in this period, particularly in the context of a common desire to grow postgraduate numbers. The evolution in doctoral funding towards investment in more structured training and cohort-based programmes in the mid-noughties, which subsequently led to the development of cross-institutional and cross-sectoral consortia, brought about an increasing focus on collaboration and challenge-led doctoral research. International partnerships, catalysed in part by European funding and enabled by easier and cheaper international travel, improved technology, and a trend towards convergence in the design and structure of doctoral programmes became an area of strategic focus for some institutions towards the middle of the twenty-tens.

Wider Research Policy Context 2015-2021

Much has changed in the wider economic and political environment since the 2015 report, not least as a consequence of Brexit and as a result of the global Covid-19 pandemic. Alongside these two considerable forces, the UK higher education sector has seen several significant assessment exercises and the publication of some major reports and reviews. The creation of UK Research and Innovation (UKRI) with the aim of increasing integrative cross-disciplinary research, the completion of the Research Excellence Framework, the publication of the Augar report (Augar, 2019) and response, the Pearce review of the Teaching Excellence Framework (Pearce, 2021), and the Industrial Strategy White Paper (BEIS, 2017) which committed the government to reach a target of 2.4% of GDP being spent on R&D by 2027 have brought about new challenges and opportunities for doctoral education, either directly or indirectly via subsequent shifts in institutional priorities.² As this report is being written, the UK sector anticipates a number of actions that have the potential to create new challenges and opportunities within doctoral education. These include the formalisation of UK association to Horizon Europe; the publication of the findings of the Nurse review of research, development and innovation sector in spring 2022; the establishment of the Advanced Research and Innovation Agency; the introduction of new mechanisms to enable science and innovation to better support the 'levelling up' agenda (the commitment to 'ensure the benefits of growth are spread to all corners of the UK' (Treasury, H.M., 2021)); and the implementation of the UK Innovation Strategy (BEIS, 2017a) focus on technologies of tomorrow.

1. Data reported for 2021 combines data from institutions who responded to the survey with information from non-responding institutions where an institutional structure to support postgraduate researchers was identified on their website through desk-based follow-up research. In 1995, 33% of higher education institutions that responded to the survey had an institutional structure to support postgraduate students.

2. Although this strategy has been subsequently discarded, the notional commitment to spending still remains, alongside currently firm areas of policy focus on people and culture in research and the place-based research agenda in the context of 'levelling-up'.

In Ireland, *Innovation 2020* (DFHERIS, 2015) has shaped policy and practice in doctoral education since 2015 with commitments to increased PhD enrolments, doubled private investment in research and development, increased doctoral graduates employed in industry, expansion of the network of research centres, investment in research facilities and equipment, and a programme of Funding for Frontier Research. The mid-term review to December 2018 (DBEI, 2019) highlighted delayed progress on investment and called for further support for interdisciplinary research to deliver economic and/or societal impact and further mission-oriented funding to address societal challenges. A recent comprehensive review of Ireland's Higher Education Research System (DFHERIS, 2021) was published in September 2021 which will further shape the future of the Irish doctoral landscape. It highlights the growing need for citizen involvement in research as a critical and growing element of research collaborations. The review also considers the importance of creating a sustainable researcher pipeline, the need to understand employer demand for doctoral and masters by research graduates, and the importance of developing standardised good practice in researcher career development, aided by the Researcher Career Framework (IUA, 2021).

The 2022 Report

This most recent report begins in Section Two with an overview of the current doctoral landscape in the UK and Ireland, considering population characteristics, structure, collaborations, wellbeing, culture, community and inclusion before exploring the impact of the Covid-19 pandemic and Brexit. Section Three highlights key trends in the international context for doctoral education as it is relevant to strategy and structure in the UK and Ireland. It focuses on numbers of awards and enrolments in countries with some of the largest doctoral populations, trends in recruitment of

international students, quality and standards, professional and work-based doctorates in the context of engagement with business and industry, mental health and well-being, and social justice. Section Four describes the methodology employed to collect the empirical data for this report. The results of the 2021 survey are then presented in Section Five. Section Six sets out the trends in doctoral education in the UK and Ireland that have emerged since 2015. It begins by revisiting policy and practice in relation to collaboration and diversification, two areas of activity that were identified in the 2015 report as characteristic of a third phase in the evolution of doctoral structures and strategy. It goes on to suggest the potential emergence of a fourth phase in which policymakers, funders, Deans, and Directors of graduate schools or equivalent structures prioritise people and culture. This section then revisits a number of key predictions from the 2015 report and considers how things have changed in 2021. The report concludes with a discussion of possible future trends alongside an acknowledgement that predictions for the future are particularly susceptible to unanticipated changes in direction within the current context.

Ethics

The 2021 survey gained ethical approval from Nottingham Trent University. An invitation to complete the online survey was sent to all UK and Irish institutions with research degree awarding powers in November 2020. The survey remained open until July 2021. 74 complete responses were received, which represents a 45% response rate.

Desk-based research was then carried out on the websites of institutions with research degree awarding powers who did not complete the survey. Further details of the development of the survey, the dissemination of the invitation to complete it, and follow-up correspondence is set out in the Methodology in section five.

2. The UK Council for Graduate Education Series on Structural Changes in Doctoral Education

The four previous publications charted the development in number, distribution and kind of organisational entities sharing the common name of graduate school from their introduction in the UK some twenty years ago, and, in the 2015 report, also the development of doctoral colleges. Each publication has used a combination of a survey conducted with UK and Irish higher education institutions, alongside a review of: university websites, national and international policy, and academic literature relating to doctoral education.

The reports began by tracking institutional responses to sector trends over the last two decades in the form of the development of organisational structures, and expanded in 2015 to include institutional strategies and priorities. Sector trends over this period have included: concerns about submission and successful completion rates for research degrees; the marginalisation of postgraduate work during the years of expansion of undergraduate programmes; growing competition from Europe, Australia and Canada for postgraduate registrations; expansion of postgraduate numbers; growing emphasis from funders on structured training and cohort-based programmes; improvements in progression monitoring; focus on the quality of doctoral supervision and support for supervisors.

The series has followed the evolution and diversification of the original graduate school model in the UK and Ireland, which drew from North American structures for graduate education and was defined in the 1995 report as:

“a distinct organisation concerned with the promotion of high quality graduate education and the administration of graduate education within an institution or across a number of institutions” (UKCGE, 1995)

It has traced the ebbs and flows in focus and funding related to centralised provision of skills training and doctoral employability, structured and professional doctorates, industrial collaboration, challenge-led doctoral research and impact, cohort-based programmes, the role of doctoral education in international development, and international networks.

The 2015 report identified three distinct periods between 1994 and 2015. These were: the establishment of graduate school structures; consolidation and regulation of quality; and collaboration, diversification and innovation of populations and models of doctoral education.

This most recent report in the series revisits common issues in structure and strategy in doctoral education that relate to identity, leadership, resources, space, technology and strategic priorities. It builds from previous findings to highlight changes and identify current trends in policy and practice and explore future challenges and opportunities.

3. The UK and Irish Context of Postgraduate Education

Population Characteristics

The UK Higher Education student base has changed considerably since the publication of the 2015 report. These changes include the balance between undergraduate and postgraduate, home and international, full-time and part-time, and male and female students (HESA, 2022).

The total number of students enrolled on degree programmes has increased to 2,751,865 in 2020/21, representing a 19.7% increase since 2013/2014. Enrolments onto postgraduate taught (PGT) programmes have increased by 46.8% in the same period from 427,870 to 628,940 in 2020/21 and represent 22.9% of the student population. At the same time, the gender balance remains in favour of women across the undergraduate (UG), PGT and postgraduate research (PGR) student population and part-time enrolments across all registrations have declined by 4.6% from 603,520 to 576,030. Following a steady decline from 2013/14 to 2019/20 in part-time enrolments, there was an 11.4% increase between 2019/20 and 2020/21.

International student numbers have grown steadily since 2013/2014 and now represent 22% of the student population, growing from 435,520 to 605,390. This growth is predominantly related to UG and PGT

enrolments. There has been a steady growth in students who declare they have disability, rising from 10% to 15.2% of the total student population between 2013/14 and 2020/21. Across the UK-domiciled student population, enrolments of Black, Asian and minority ethnic students have grown from 370,440 to 551,250 in the same time period (comprising 20.1% of the total student population).

UK postgraduate provision (PGT and PGR together) has shown an increase of 37.8% between 2013/14 (539,440) and 2020/21 (743,340). This has been driven by Home and International markets. Enrolments from the European Union (EU) are in decline, especially across PGR, where a 9% decrease was observed between 2017/18 and 2018/19 alone. PGT enrolments have reversed the trend observed in the 2015 report of a decline of 10.8%, demonstrating a 46.8% growth within the same time period. PGR enrolments account for 4.2% and had shown steady growth until 2018/19, at which point a small decrease led to 0.7% decline overall from 111,495 in 2013/14 to 110,675 in 2019/20.³ This slight decrease occurred across all PGR domicile groups (Home/EU/International).⁴ It can be at least partly attributed to the reported negative impact of the Covid-19 pandemic on recruitment in the final quarter of 2019/20 and the increase in suspensions in enrolment

3. This section cites HESA data for 'postgraduate researchers' in UK higher education institutions and HEA data for 'PhD students' in Irish higher education institutions. HESA data does not disaggregate types of research degree and therefore the available data will include all postgraduate research degrees, whilst the available data for Ireland from HEA is PhD only.

4. It is worth noting that despite a small decline in the numbers of international postgraduate researchers, this group has grown slightly as a percentage proportion of the overall population from 30% in 2015 to 31% in 19/20.

which occurred as existing PGR were unable to progress their research, encountered financial or health difficulties, or took on additional caring responsibilities as a consequence of the pandemic. 58.8% of respondents to the 2021 survey indicated that one of the main impacts of the pandemic has been an increase in suspensions. The 2020/21 PGR enrolments have now recovered to 114,405

Amongst UK postgraduate researchers there has been a small increase in the concentration of PGR in the 24 Russell Group universities, up from 55% in 2013/14 to 56.6% in 2020/21. The balance between full-time and part-time enrollers has changed, with full-time PGR increasing from 81,940 in 2013/14 to 86,930 in 2020/21, whilst part-time PGR numbers have declined from 29,580 in 2013/14 to 27,475 in 2020/21 (HESA, 2022). Full-time PGR comprise around 76% of the total PGR population in 2020/21, an increase from 73% recorded in the 2015 publication. The overall gender balance amongst postgraduate researchers in the UK has now shifted slightly in favour of those who identify as female (50% female, 49.5% male, 0.5% other). Minority ethnic group representation for UK-domiciled PGR has grown to 13,005 in 2020/2021. This marks an increase to 19.2% from 15.8% in 2013/2014. (See Section 2). Enrolments from PGR who have declared they have a disability has increased to 13,865 in 2020/21, representing an increase to 12% from 6.2% in 2013/14. The ages at registration have remained broadly consistent. The majority of registrations remain within the 21-29 age group, with 34% of PGR registrations between the ages of 25 and 29. There has been a small increase in PGR aged 30 and over, from 43% to 44%. The over-30 age group comprises 82.9% of part-time PGR registrations in 2020/2021. 64% of UK, 68% of EU and 61% of International PGR are

found in science, technology, engineering and maths.

International student numbers in the UK are concentrated in science, technology, engineering and maths (STEM) subjects and social science disciplines of economics, politics, law, management and education (HESA, 2022). The largest increase in international PGR recruitment has come from Saudi Arabia. There has been continued steady growth from China, India and the United States. This varies slightly in the forecast as set out in the 2018 British Council report 'International student mobility to 2027: Local investment, global outcomes', which highlighted top growth markets for outbound students in the next ten years as China, India, Pakistan, Nigeria and Bangladesh. Recruitment from Europe has been in decline since the outcome of the 2016 UK referendum to leave the European Union. The majority of PGR in UK universities from the European Union now come from Germany, Italy, France, Greece and Spain.⁵

In Ireland, overall postgraduate student numbers have increased by 45.9% between 2013/14 and 2020/21. PGR enrolments have seen a 21.3% increase in the same timeframe.⁶ Growth has been driven predominantly through increases in enrolments at Institutes of Technology and through growth in international enrolments; both from within (37%) and outside (68%) the European Union. It would appear that the commitment to 'increase enrolment of postgraduate researchers to address demand in the economy from 1,750 in 2015 to 2,250 in 2020' (DFHERIS, 2015) has not been achieved, although the growth in PhD enrolments in Information and Communication Technologies, Engineering, Education and Health between 2013/14 and 2019/20 suggests the shift towards 'disciplines aligned to

5. www.hesa.ac.uk

6. <https://hea.ie/statistics/data-for-download-and-visualisations/enrolments/key-facts-figures-2020-2021/>

enterprise and other national needs' (Ibid) has been more successful. The overall gender balance amongst postgraduate researchers in Ireland has shifted in favour of those who identify as female at 52%. Within this rise in female participation, there has been a 19.5% increase in female PGRs pursuing doctorates in specifically in Natural Sciences, Maths and Statistics (compared to 10% increase in male PGR in the same discipline area). Unlike the UK, part-time enrollers in Ireland have grown, from 1,153 in 2013/2014 to 1,909 in 2020/2021, representing a greater percentage growth than full-time PGR and perhaps reflective of the growth in doctoral research with a more applied focus. There has also been a 10% increase in PhD candidates who are over 24 when they begin their doctorate, with larger increases in older enrolments in Engineering, Manufacturing and Construction (24% increase) and Information and Communication Technologies (19% increase).

Structure

The trend towards diversification of doctoral programmes identified in the 2015 report continues to some extent. As discussed in 2015, changes in UK funder requirements have introduced more structure and a greater taught element to cohort-based doctoral training programmes. This ranges from the inclusion of a loose programme of non-credit bearing workshops and events to develop community and generic skills to full masters-level modules, rotations across a number of different laboratories in the UK and overseas, and mandatory placements. Nascent changes in emphasis of some funders towards encouraging pre- and post-92 university doctoral training consortia have seen the extension of cohort-based training beyond research-intensive Higher Education Institutions (HEIs) in the last five years in the UK (Figure 1 below). Alongside this, initiatives such as the Doctoral Training Alliance (DTA) – a national consortium of UK universities which are predominantly part of the Universities Alliance

Mission Group – have expanded their number of programmes and postgraduate researchers over the period since the 2015 report. European Commission funding and continued institutional investment have underpinned an expansion of the DTA portfolio which has offered a structured, cohort-style doctoral experience through four interdisciplinary research programmes in business-facing universities to a total of 275 PGR across 23 business-facing universities in the last six years.

In Ireland also, cohort-based PhD programmes have become an established mechanism for investment in doctoral training, managed by the Irish Research Council and Science Foundation Ireland and known as Centres for Research Training. In addition, joint 'Centres for Doctoral Training', linked with UK Higher Education Institutions and co-funded by the Engineering and Physical Sciences Research Council were established in 2019.

It is important to note still that the majority of postgraduate researchers in the UK and Ireland are located outside of these programmes. For example, of the more than 13,000 social scientist postgraduate researchers recorded in HESA data in 2018/19, fewer than 4000 are funded by the Economic and Social Research Council. The majority of Social Science PGR are trained outside of the structured, ESRC-funded Doctoral Training Partnerships (14) and Centres for Doctoral Training (2). For most UK postgraduate researchers, the structure of their doctoral programme will be shaped by their university's engagement with the Researcher Development Framework, The *Concordat to Support the Career Development of Researchers* (Vitae, 2019), and the *Concordat to Support Research Integrity* (UUK, 2019). This structure will be further informed by institutional research strategy and the Research Excellence Framework. In Ireland, the implementation of the 2015 *National Framework for Doctoral Education* (IUA, 2015), facilitated through the establishment of a National Advisory Forum and alongside the *Irish Universities Doctoral Skills Statement* (IUA, 2015a, 2021a) has raised requirements

for ‘structured graduate training opportunities’ (IUA, 2021: 5) in all Irish universities. Drivers for these include ensuring excellence in quality of postgraduate education; supporting closer collaboration across Irish universities on doctoral education; enhancing employability of doctoral graduates; and increasing the international standing of the Irish doctoral award. The 2021 review of the Framework’s implementation found that ‘there is a clear trend towards an enhanced establishment of structured doctoral studies across the sector, even if the term ‘structured’ is not commonly used. Most prominently, this includes taught courses worth a predefined minimum number of credits as well as more formalised supervisory and progress review arrangements’ (IUA, 2021a: 26).

The picture for professional doctorates is more difficult to interpret. HESA data does not readily disaggregate all professional doctorates from PhDs as the category ‘research doctorate’ encompasses not just PhD programmes but also some types of professional doctorate. How programmes are coded and returned to HESA is a decision made at institutional level. It is therefore unclear whether the significant decline in professional doctorate enrolments, identified by House (2020) as a near

50% reduction in ten years (2007/8 to 2017/18) is an entirely accurate reflection of the rate of decline across the portfolio of professional doctorates. This raises the questions of whether potential applicants’ needs for doctoral study related to professions still exist, and if so, how they are being met. The growth of and access to more flexible PhD programmes that accommodate portfolio, practice and other modes of presentation may have influenced the market for professional doctorates, although further data is required to accurately assess the current situation regarding professional doctorate enrolments.

Collaboration and Partnership

In the UK, the number of collaborations with a doctoral education component between UK universities and with international institutions has continued to grow since the publication of the 2015 report, offering the opportunity of a broader development and training experience for doctoral researchers. The White Rose University consortium is an example of a long-term partnership between Leeds, Sheffield, and York Universities which has grown over the course of the last six years to now

	AHRC		BBSRC		ESRC		MRC		NERC		EPSRC	
	Years to 2015	2021	Years to 2015	2021	Years to 2015	2021	Years to 2015	2021	Years to 2015	2021	Years to 2015	2021
Pre-1992 HEIs	61	58	33	41	45	64	28	40	40	53	27	40
Post-1992 HEIs	22	14	0	5	1	16	0	0	0	4	0	1

Table 1: Pre- and post-92 Higher Education Institutions (HEI) representation in UK Research and Innovation (UKRI) funded Doctoral Training Programmes within the Arts and Humanities Research Council (AHRC), Biotechnology and Biological Sciences Research Council (BBSRC), Economic and Social Research Council (ESRC), Medical Research Council (MRC), Natural Environment Research Council (NERC), Engineering and Physical Sciences Research Council (EPSRC)

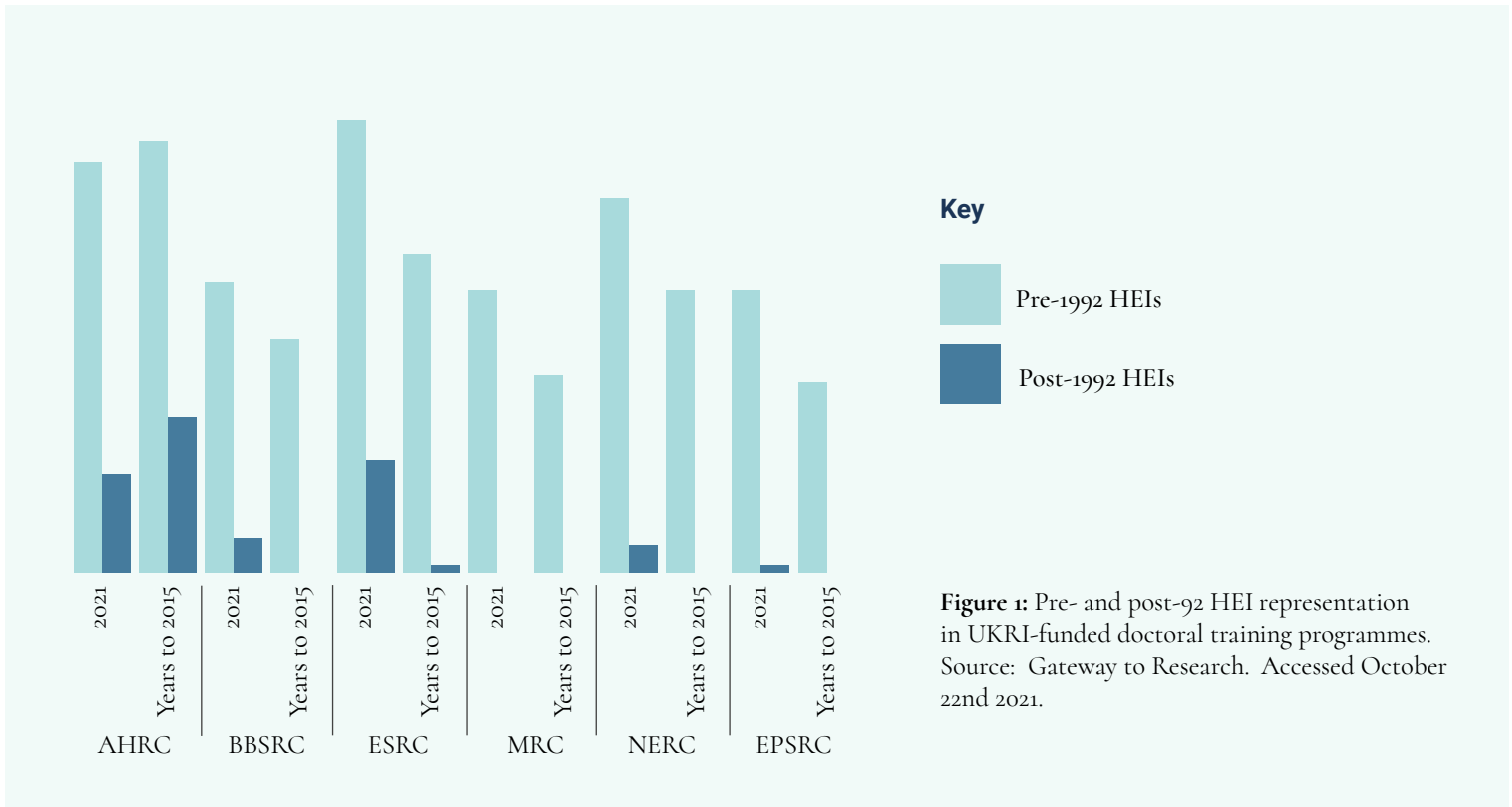


Figure 1: Pre- and post-92 HEI representation in UKRI-funded doctoral training programmes. Source: Gateway to Research. Accessed October 22nd 2021.

provide a structure for three separate doctoral training partnerships in Arts and Humanities, Social Sciences, and Engineering as well as a studentship network scheme that is underpinned by institutional investment in nascent research collaborations. The Doctoral Training Alliance, mentioned previously, is another example of mission-group based national network of business-facing universities offering interdisciplinary, cohort-based doctoral training in areas of applied research, which has doubled the number of its programmes since 2015. Midlands4Cities, a doctoral training partnership funded by the Arts and Humanities Research Council, is a rare example of a large consortium focused on doctoral training which has brought together pre- and post-92 institutions from the first training award in 2013.

Since the 2015 report, the consolidation of UKRI funded Doctoral Training Programmes (DTP) across UK HEIs has broadened in its inclusion of post-92 institutions’ membership and collaboration with

typical pre-92 research-intensive recipients of DTP awards.

A comparison of the number of UKRI-funded cohort-based doctoral training programmes since the 2015 report and January 2022 shows that there has been a slight increase in the participation of post-92 institutions, as indicated above in Table 1 and Figure 1. Figure 2, however, shows that despite increased participation by post-92 universities in cohort-based training consortia, the funding allocation has largely remained the same and continues to be very focused on the universities who have historically received the majority of investment in doctoral training.

Despite changes in consortia membership to include more post-92 institutions, the percentage of UKRI-funded studentship awards begun between 2016 and 2020 shows little change in the type of university which has received doctoral funding over the last five cohorts. That is to say, although more post-92 institutions have become partners in UKRI-funded

cohort-based doctoral training consortia since the last report, the number of studentships allocated to post-92 universities remains broadly unchanged. The situation is tracked in Figure 2 below as the percentage of total UKRI-funded studentship awards made where a post-92 university is recorded as the ‘lead research organisation’ (where the holder of the studentship is primarily located) from 2016 to 2020.

BBSRC awards in 2020 are 2% above the Council’s mean average for the period, whilst ESRC and EPSRC both are 1% above. AHRC and NERC 2020 awards show 5% and 2% below respectively.

International Collaboration

Cotutelle and dual award programmes are also gaining momentum across UK universities. Flagship partnerships highlighted in Universities UK (UUK, 2020) include Imperial-Technical University of

Munich, Joint Academy of Doctoral Studies, and University of Leeds and The China University of Petroleum. The University of Manchester has recently launched a dual doctoral programme with IIT Kharagpur (March 2021), which is the latest to join a growing portfolio of partnerships to include PhD dual award programmes between UK universities and Indian Institutes of Technology. At the same time, national policy drivers to increase the number of university teachers who are qualified to doctoral level in countries with developing higher education sectors (referenced in Section 3) has seen the development of a doctoral market for split-site and at-distance degrees amongst transnational education partners as well as partnerships between UK universities and international government funders in doctoral education.

Since the 2015 report, Global Challenge Research Fund (GCRF) investment, which was part of the UK’s official development assistance, has supported doctoral mobility and additional collaborative

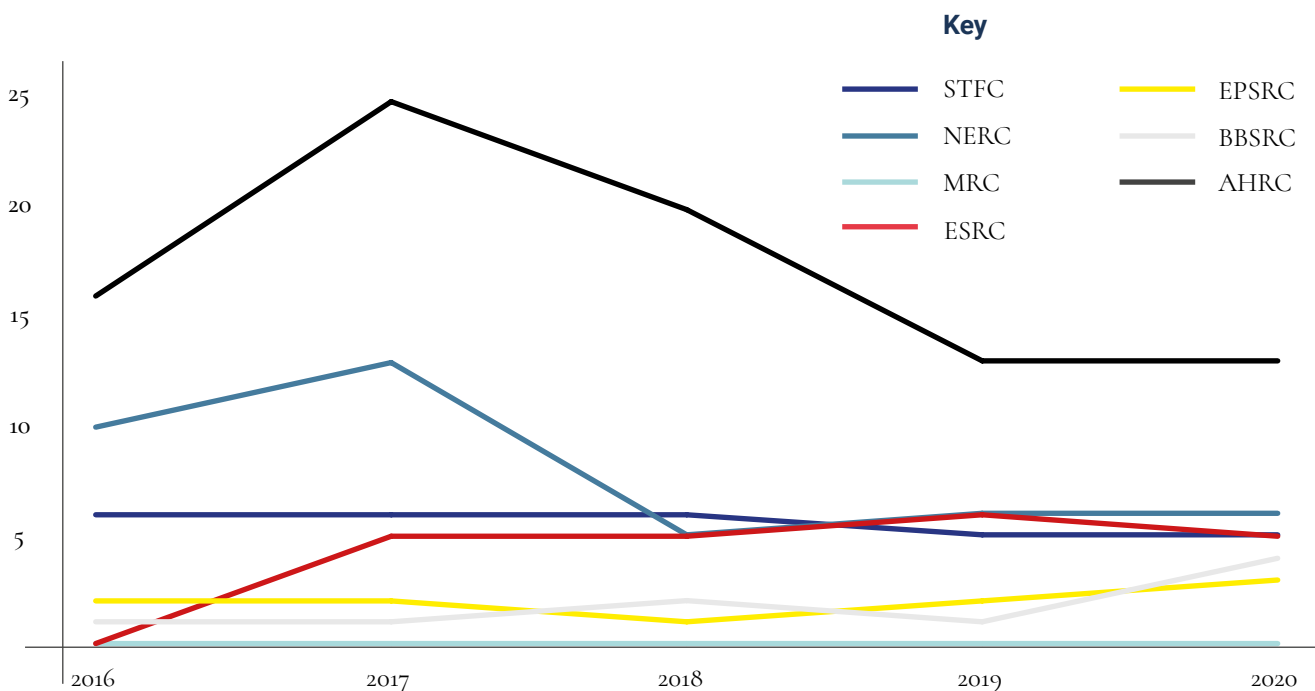


Figure 2: Percentage of total UKRI-funded Studentship Awards made to Post-92 Universities as ‘Lead Research Organisation’
 Source: *Gateway to Research* (accessed October 22nd 2021)

doctoral training with universities in lower- and middle-income countries, either directly through funding calls or as a result of institutional strategies to invest Quality Related-GCRF allocation. An example is Durham University's Global Challenges Centre for Doctoral Training. Whilst budget cuts in Spring 2021 led to the available GCRF funding being significantly reduced, subsequent changes in eligibility for international candidates to apply for all UKRI-funded postgraduate studentships from the start of the 2021/22 academic year (announced by UKRI in summer 2021) have the potential to support the continuation of some of the collaborative work that GCRF investment began. The fee shortfall created by UKRI funding covering only home fees will however be a significant obstacle for universities to overcome. Future growth in dual award programmes could be further supported by an expansion of system-to-system agreements between UKRI and other leading funding agencies over the coming years, which is a recommendation arising from the report by UUK (2020), linked to extending the UK's global outlook and raising the UK's reputation internationally. This could also have a positive impact on markets for at-distance and transnational doctoral education programmes.

In Ireland, the call from the 2018 Irish Universities Association's *National Review for Collaborative Research Degree Programmes* for standardised definitions and regulations to facilitate collaboration at doctoral level appears to have been heeded, at least in part, according to the recent review of the implementation of the National Framework for Doctoral Education (EUAS, 2021). The review highlights the value of the 2015 framework in promoting the Irish doctorate, presenting Irish doctoral education as cohesive with commonly agreed procedures and approaches and thereby assisting with the development of international partnerships in recent years (EUAS, 2021: 28). Collaborative awards at doctoral level since 2015 have included partnerships between Trinity College Dublin and University College Dublin, University College Dublin and Melbourne University, Australia

and a major joint funding initiative between EPSRC and Science Foundation Ireland (SFI) investing in seven UK-Ireland doctoral collaborations between Centres for Doctoral Training and SFI Research Centres. Examples include MaREI (the SFI Research Centre for Marine and Renewable Energy) at University College Cork, and the EPSRC Centre for Doctoral Training in Energy Resilience and the Built Environment at University College London and Loughborough University.

The portfolio of doctoral programmes has continued to diversify since 2015 in terms of structure, mode of delivery and scope, scale, and types of partnerships in many universities. These changes have been brought about by policy drivers, opportunities presented by existing consortia, evolving demographic characteristics, preferred mode of study, and new funding schemes. The resultant complexity poses challenges for graduate schools or equivalent, particularly in the context of projected future growth based on birth rate and progression rate (Hancock, 2020), the likelihood of an increase in PGR enrolment in the post-pandemic period similar to the 2008 recession, and the positive impact of the recent focus on increasing participation in doctoral education from under-represented groups. Mental health and well-being are key risks for graduate schools or equivalent managing simultaneously growing and increasingly diverse doctoral populations and programmes. At the same time, these two areas have become points of sector policy focus and increasing activity at university and consortia level in the UK since the 2015 report.

Mental Health and Wellbeing

The Vitae report in 2018 on postgraduate researcher mental health and well-being highlighted the unique challenges faced by postgraduate researchers in comparison with undergraduate and postgraduate taught students. This included financial worries,

difficult relationships with supervisors, and feelings of isolation. These findings were echoed in a report the following year published in *Nature* (Woolston, 2019) that found that more than one-third of 6000 respondents around the world to a graduate student survey had sought help for anxiety or depression related to their PhD. Another 2020 study has found that supervising PGRs with mental health problems has a significant impact on a supervisors' own psychological wellbeing (Blackmore et al., 2020). In part, in response to growing concerns in this area, Catalyst funding of £1.5 million was invested in 17 projects across English universities 2018-2020 that were designed to support the development and implementation of sustainable mechanisms to support the mental health and wellbeing of PGR. The funding programme outcomes included a report with targeted recommendations developed in line with the programme findings for the sector, senior academic leaders, supervisors, and other academics with postgraduate responsibilities, professional services staff, and postgraduate researchers (Metcalfe et al., 2020).

Research culture and community

Research culture and community has also become increasingly central to discussions around mental health and well-being of researchers from PhD to professor. The summary of the Postgraduate Research Experience Survey (PRES) 2021 survey into the experience of PGR in the UK (Pitkin, 2021) highlights issues such as loneliness and isolation. This strongly aligns with annual PRES findings since the last report, which consistently point to a lack of integration into their local research community felt by respondent PGR. In response, Pitkin calls for the development of a more proactive offering of counselling and other forms of mental health support to researchers, and for a culture change away from a position where the doctoral community accepts that a PhD is supposed to be

hard and expects that postgraduate researchers are meant to suffer (Pitkin, 2021: 21). Similar negative issues within the wider research culture were highlighted in the Wellcome report (Wellcome and Shift Learning, 2020), which found that unhealthy competition, bullying and harassment in research environments could create mental health issues amongst research staff.

The *Research and Development People and Culture Strategy* (BEIS, 2021) is a call to action on the future of research in the UK, with a commitment to improve the experiences of researchers and to provide additional investment to address issues of inequality and participation in research by people from a variety of sectors and backgrounds. The aim is to create a more open, diverse and enabling research culture. The *Research and Development People and Culture Strategy* and the forerunner *UK Research and Development Roadmap* (BEIS, 2020) also set out the UK government's commitment to a 'new deal for postgraduate research'. The New Deal was framed as an ambitious, long-term programme of evaluation and change with four areas of focus: diversification of models and access; funding and stipend levels; rights and conditions; and routes in, through and out. Projects across UKRI are already contributing to this programme of work which includes an on-going consultation with postgraduate researchers, supervisors, universities, industry, and mission groups. Findings from the already completed reviews of doctoral degrees from EPSRC (EPSRC, 2021) and ESRC (Tazzyman et al., 2021) in their respective discipline areas cluster around the following themes: an acknowledgement of the value to PGRs of gaining wider experiences outside of their doctoral project (including either through placement, training or applied research activity); the importance of industrial collaboration; the need for a flexible, tailored doctoral training offer; specialist support for employability across a wide variety of career paths; and quality of doctoral training over quantity of studentships available.

Both reviews identified the critical role played by

supervisors in contributing to and enabling an excellent doctoral training experience. This was further explored in the recent *UKCGE Research Supervision Survey Report* (Gower, 2021). This report offered new insight into the supervisors' perspective on how current structure and strategy in doctoral education supports and enables supervisors. The survey findings described the changing supervisory role over the last five years, with an increasing need to offer pastoral support to their doctoral candidates rather than an exclusive focus on supervising the doctoral project. The report highlighted that, whilst many supervisors who responded to the survey enjoyed supervision, fewer indicated that they felt supported to enact good supervision. The synergies between the findings of *UK Research Supervision Survey Report* (UKRSS) and this survey are explored further in the results and conclusions chapters in relation to training and support for research staff and supervisors, and the role of supervisors in the social justice agenda.

Widening participation, inclusion and the role of doctoral education in supporting 'levelling up' also featured at length in the EPSRC and ESRC reviews. Underrepresentation from minority ethnic groups and those with other protected characteristics, as well as certain socio-economic backgrounds and those entering doctoral education from non-traditional academic routes were areas of focus which this report will explore in the next section.

Access and Inclusion

There have been a small number of policy interventions which have sought to improve access to doctoral education for under-represented groups in the UK since the last report. The most significant of these has been the introduction of postgraduate loan schemes. The Masters Loan scheme introduced in 2015/2016 and the Doctoral Loan scheme from Student Finance England and Student Finance

Wales, which was available to new postgraduate researchers commencing in 2018-19 have sought to make postgraduate study more affordable to candidates from lower socio-economic groups. However, whilst masters loans did bring about a significant overall increase in enrolments (35% upon the introduction of the scheme), the total number of new doctoral candidates saw only a modest increase of 5.5% between 2017-18 and 2018-19, when the loans were first made available (compared to 2.5% between the previous two years) (Bennett, 2020). House (2020) and the findings of the 2019 *Future PhD Student Survey* (Bennett, 2020) also highlighted that prospective doctoral candidates generally recognised that the doctoral loan was not sufficient to fund a PhD in isolation, which may well have reduced its effectiveness as a mechanism to promote better access amongst under-represented groups. Moreover, before the scheme was implemented, the *Postgraduate Doctoral Loans Policy Equality Analysis* (Department for Education, 2017) had already highlighted the potentially lower take-up of the loan scheme by women and minoritised groups, citing evidence that students from black and ethnic minority backgrounds and women were more likely to be debt averse. It was also recognised that the scheme was not a Sharia-compliant loan mechanism, and as such, did not meet the needs of Muslim postgraduates. There has been no evaluation of doctoral loans to date in terms of their impact on widening access to doctoral study.

2022 has also seen the commencement of 13 new projects in English universities to improve Black, Asian and minority ethnic students' access to postgraduate research. These projects represent a £7.7m investment over four years from Research England and the Office for Students.

UK PGR population data shows only a small increase in representation of racialised groups at sector level from 15.8% in 2013/2014 to 19% in 2020/2021. In terms of UK-domiciled PGR, the increase in ethnic diversity has not been evenly distributed across the sector. PGR from racialised

groups continue to account for a significantly higher percentage of the PGR population at post-92 universities. These universities have seen a higher percentage increase since the last report, although overall numbers are much smaller. The change is summarised in Table 2a and 2b below which

compares data on representation of racialised groups in the UK-domiciled PGR population between 2014/15 and 2019/20, by mission group. Further data on gender and disability in the UK PGR population can be found in Section 2.

Mission Group	Total number of PGR	Number of PGR where ethnicity is known	Percentage of PGR Population reported as '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)
Million Plus	4,915	4,790	21%
University Alliance	2,825	2,680	20%
Russell Group	33,575	32,540	16%
No Mission Group	22,675	21,695	17%
UKADIA	380	370	12%

Source: HESA 2014/15

Table 2a: Full-person equivalent UK-Domiciled PGR by Mission Group

Mission Group	Total number of PGR	Number of PGR where ethnicity is known	Percentage of PGR Population reported as '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)
Million Plus	4,790	4,680	25%
University Alliance	3,180	3,095	23%
Russell Group	33,780	3,2515	18%
No Mission Group	22,935	22,220	18%
UKADIA	315	305	16%

Source: HESA 2019/20

Table 2b: Full-person equivalent UK-Domiciled PGR by Mission Group

In Ireland, access and inclusion has been less prominent in policy and practice over the last six years, although a recent focus on growing the numbers of doctoral candidates in the emerging technological university sector has the potential to enhance the inclusiveness of doctoral funding in terms of the types of research undertaken and the applicants that the funding attracts. An additional €7.5m funding package to the Irish Research Council for investment in 40 doctoral awards targeted at technological universities was announced by the Irish government in January 2021 (IRC 2021).

Whilst universities strive to create more inclusive doctoral communities and to evolve a more positive and supportive research culture, driven by survey findings and the development of new policy and funding drivers, the global pandemic has introduced new challenges and has stimulated new ways of working that have the potential to persist beyond Covid-19.

Global Pandemic

The main challenges faced by UK and Irish universities have been the lack of additional financial support made available for PGR who were unable to continue their research due to laboratory and archive access constraints, childcare requirements, and mental and physical illness.

In Ireland, the Higher Education Authority provided costed extensions for doctoral projects where a case could be made that no-cost or cost-neutral extensions were not possible (IRC, 2021a). Universities were required to waive the fees of the postgraduate awardees in these cases. In the UK, UKRI – who fund 25% of postgraduate researchers – issued final-year PhD students with an extra six months of funding and made an additional £19m available in a second tranche of support focussed on those with ongoing support needs, including disabled

students, those with long term illnesses, those who are neurodivergent, and those who have caring responsibilities. Their advice was to reframe research projects to allow them to continue without compromising ‘the quality of doctoral training’ diminishing the doctoral degree, or compromising the ‘healthy and supportive research culture’ (UKRI, 2020). The negative response from the funded doctoral community was captured on a ‘Thoughts on UKRI’s policy announcement’ Padlet and was widely disseminated across PGR networks and social media. It was followed by the ‘Falling Short’ report (Munroe and Heath, 2021) which highlighted how unsupported the funded doctoral community felt, and in particular how specific groups within this population had been unequally affected, for example, those with caring responsibilities, those from minority ethnic backgrounds, and those from lower-income households. The report became part of a dialogue between the authors and UKRI and mainly addressed what the authors perceived to be inadequate communications from the funders and insufficient funding to mitigate the negative effects of the pandemic.

The three-quarters of the PGR population who were not funded by UKRI had to rely on financial support made available through institutional hardship funds or funded extension schemes which were implemented locally, where universities were able to repurpose largely existing studentship funding to provide immediate support at the cost of future investment in the next generations of doctoral researchers. For many self-funded PGR, suspension was the only viable option. PRES 2021 recorded a mean average of 66% (ranging from 54% to 84%) satisfaction from respondents indicating they had received appropriate support from their institution during the Covid-19 pandemic.

Both QAA (2021) and UKCGE (2020) provided guidance to inform institutional approaches concerning standards and possible impacts of the pandemic and mitigation strategies at different stages of the PGR lifecycle, support for mental

health and well-being, induction and training and examination. Given the timeframe of the report, the collation of data for PRES 2021 and the broad level of satisfaction, it is difficult to say with any certainty to what extent individual institutions were able to act upon those recommendations. In Ireland in 2021, the Higher Education Authority, Science Foundation Ireland, and the Irish Research Council commissioned a survey of the research community, including postgraduate researchers, to investigate the impact of Covid-19 on research (IRC, 2021). The findings are yet to be published.

There is emerging anecdotal evidence that the pandemic has driven innovations in modes of delivery for doctoral training and events, which have reportedly seen an increase in engagement amongst the PGR community. Many universities in the UK and Ireland, at least temporarily, have accepted electronic submission of theses and permitted viva voce examinations to be conducted online during the most highly restricted periods of lockdown. Whilst these new ways of working have yet to be fully evaluated for their impact on some groups, such as those with unreliable internet access, poor housing, some disabilities and neurodivergence, it is likely that the most effective and inclusive of these innovations will be either wholly retained or used to inform further development of process and practice. The contribution that doctoral education can make to post-Covid recovery also remains to be determined. In the UK, recovery will at least partly be framed within the government's agenda on 'levelling up', tackling regional disparities in health and education outcomes and supporting regeneration in towns and cities, the 2050 net zero greenhouse gas target, and the aspirations towards a 'Global Britain'. There is potential for doctoral education to better address these emerging priorities through the development of place-based doctoral training partnerships and by further innovation in doctoral programme design to enhance civic engagement and ensure that all parts

of society have a voice in shaping and contributing to the future agenda for research. At-distance programmes, ensuring that the open research and open data agendas are fully addressed, and devising new mechanisms for virtual mobility amongst doctoral candidates and supervisors will play a part in supporting the growth of new international collaborations in the wake of a challenging few years brought about by the combination of pandemic and the uncertainties related to the UK's decision to leave the European Union (EU) in 2016.

Brexit

The impact of the Brexit vote and the ensuing uncertainty leading up to UK departure in 2020 has seen the rate of EU postgraduate researcher enrolment in the UK steadily decline over the last five years. PhD fee levels and immigration status uncertainty have been cited as primary reasons for prospective European candidates looking to pursue their doctoral studies elsewhere. Some stability in access to European funding for research has been assured through the UK government's commitment to the EU's Horizon science and innovation programme, at least for the period 2021-2027, which includes the Marie Skłodowska-Curie Actions programme (MSCA) that supports the mobility and training of researchers in the EU. The UK, however, withdrew from the EU Erasmus Mundus mobility programme which not only supported PGR mobility but also Joint Masters Degree programmes (of which the UK was involved in 27 with European partners). Whilst postgraduate researchers are eligible to participate in the replacement Turing Scheme, the narrower focus on out-going individual student mobility is less enabling to the development of international research collaborations and recruitment pipelines of highly qualified international applicants to UK doctoral

programmes. The UK Government announced in February 2021 that the new Graduate Route would be extended for PhD students to allow them to remain in the UK for three years after study, with the intention of increasing the UK's competitive edge in the global competition for doctoral talent in the post-Brexit period.

Brexit presents Ireland with both challenges and opportunities. As Senator Malcolm Byrne, the Seanad Spokesperson on Further & Higher Education, Research, Innovation & Science put it in December 2020, 'Brexit is a big risk – and an opportunity to become a global centre for learning' (Byrne, 2020). For doctoral education, the concerns are three-fold. Firstly, there is anxiety related to the potential reduction in access to funding for research, including doctoral training that could be brought about by strategic UK partners being excluded from future funding calls. The second concern is the likely overall reduction of available funding for Horizon Europe (successor to Horizon 2020) programmes due to a decrease in the European budget. The third issue is a potential reduction in access for Irish-based researchers to some UK funding programmes, such as Wellcome and Department for International Development.⁷ Calls for additional investment in Irish research up to 2.5% GNP (IUA, 2019) before UK departure were designed to enable Irish universities to capitalise on their position as the remaining English-speaking higher education sector in the European Union to recruit outstanding talent, from senior academics through to PhD, from the UK and internationally, thereby augmenting and growing Irish research and doctoral programmes. Irish government expenditure has remained at 1% (0.92 in 2019) since 2011 (Murray, Sep 29, 2021).

It is too soon after the UK's departure from the EU for its full impact on doctoral recruitment, mobility, funding and collaboration to be known.

7. Summary from the Irish Universities Association Submission to Seanad Special Select Committee on the Withdrawal of the UK from the EU, 9 October 2019.

4. The International Perspective on Doctoral Education

Structures and strategy in doctoral education in the UK and Ireland are linked not just to the realities of individual universities and their national contexts but also to trends in policy and practice around the world.⁸ This section goes on to highlight key trends in the international context for doctoral education as it is relevant to strategy and structure in the UK and Ireland, focusing on numbers of awards and enrolments, international recruitment, quality and standards, professional and work-based doctorates in the context of engagement with business and industry, mental health and well-being, and diversity and inclusion.

Awards and Enrolments

Doctoral education is widely accepted to play an important role in human capacity development by producing a workforce that can most effectively meet the needs of the knowledge economy and thereby has the potential to drive economic growth and prosperity, assuming business, industry, third sector have the capability to absorb innovation.⁹

In part driven by an innovation and economic development agenda, there has been substantial growth in the number of PhD graduates internationally. Table 3 (p.30) shows the top five countries identified by the Organisation for Economic Cooperation and Development (OECD) as currently awarding the highest numbers of doctoral degrees, alongside the United Kingdom and Ireland.

More than 300,000 doctorates are awarded globally each year. The majority of doctoral education continues to be enacted in countries and regions that are responsible for the majority of global research output, such as North America, Europe, and Japan. Countries and regions with low birth rates and shrinking populations, such as the UK, Germany, Scandinavia, Japan, and Australia continue to seek to attract postgraduate researchers as potential contributors to a highly skilled workforce of the future (OECD, 2018: 229). However, emerging economies who have previously invested significantly in overseas scholarships are increasingly turning their focus to expanding their national production of doctoral awards. China has overtaken the United States as the single national producer of the largest number of doctoral graduates. 79% of China's total award output in 2019 is categorised as science, technology, engineering, and maths (STEM)

8. For a broad overview of trends and issues in doctoral education from countries in Europe, North America, Africa, Asia, Latin America and the Middle East see Yudkevich, Altbach and De Wit (2020).

9. This view is not uncontested. Rizvi and Lingard (2006) relate this policy theme to functionalist assumptions made at an Organisation for Economic Cooperation and Development (OECD) level that manifest in the educational policies of OECD members. Servage (2009) questions the validity of this approach, particularly in relation to doctoral education. Nevertheless, doctoral education frequently features as a mechanism for improving economic prosperity in national and supranational policy.

Country	Total number of doctoral awards (year)	Notes	Source
China	62,578 (2019)	14% increase across all disciplines from 2015	Chinese Ministry of Education
United States	55,703 (2019)	1.5% increase from 2015	National Center for Science and Engineering Statistics, Survey of Earned Doctorates
India	37,976 (2019)	39% increase from 2015	All India Survey on Higher Education
Germany	27,838 (2018)	5% decrease from 2015	OECD
United Kingdom	25,100 (2020/21)	10.8% decrease from 2016/17	Higher Education Statistics Agency
Brazil	22,927 (2018)	19% increase from 2015	OECD
Ireland	1466 (2018)	16% decrease from 2015	OECD

Table 3: Top five countries awarding highest number of doctoral degrees (alongside UK and Ireland)

(Zwetsloot et al., 2021). Zwetsloot et al. project more than 77,000 doctoral awards for China in STEM and health sciences alone by 2025. Chen (2020: 285) highlights that the majority of current awards are made from China's 50 largest research universities. This grouping has recently been expanded with the establishment of new universities focused on graduate education, for example, the University of the Chinese Academy of Sciences, and a new type of private, not-for-profit research university, such as Westlake University in Hangzhou. Chen suggests that additional capacity-building through the creation of new universities, the expansion of doctoral education into other existing higher education institutions, and policy commitments to increasing numbers of international doctoral candidates has the potential to drive further growth (Ibid).

Similarly, doctoral enrolment data in India, which show a 60% increase between 2014/15 and 2019/20, suggests that the already significant growth in

doctoral awards will gain pace in the coming years. The creation of a new, national science funding agency in 2020, the National Research Foundation, has the potential to catalyse additional large-scale growth in doctoral programmes as well as post-doctoral positions as it will enable state universities, not just government laboratories and institutes of science and technology, to benefit from research funding. The increased access to research funding for Indian state universities also has the potential to support the development of more international

strategic institutional links at doctoral level.

International Recruitment

International doctoral candidates form an increasing part of the doctoral community in Germany (from 17 to 19% between 2015 and 2018) where overall awards have decreased over recent years. However, there is some evidence to suggest that the concentration of doctoral programmes within Germany's 113 universities is broadening out to include more collaborations with different types of organisations, such as research institutes and universities of applied sciences (BuWiN, 2021: 5). Kehm (2020: 97) suggests that this may in part relate to previous criticism of the German Excellence Initiative, which saw a €1m annual investment concentrated in 45 graduate schools with programmes that favoured basic science over industry application and did little to support doctoral candidates to develop the skills required for careers outside of academia. Whilst outside of a single German state (Hesse), degree-awarding powers remain the preserve of universities, the increasing number of collaborations at doctoral level between universities, research institutes and universities of applied sciences suggests the potential to grow the total number of doctoral programmes, diversify the programme portfolio, and increase the number of awards in the future. This growth may be constrained by the German tradition of hiring most doctoral candidates as faculty staff and by Germany's existing high number of doctoral degree holders.

Both Germany and Ireland conform to a trend across European Union nations seen between 2015 and 2019 of stable or decreasing numbers of doctoral awards made. Spain, Austria and Belgium buck this trend with a 52%, 27% and 9% increase in awards in this

time period respectively. In Brazil, the four-fold growth in awards between 1998 and 2016 has slowed (de Almeida, Ernica and Knobel, 2020: 389) and the discipline focus has shifted away from STEM and towards the humanities and social sciences (Ibid: 401). Whilst supply of doctoral awards is relatively stable in the United States, Europe, Australia, New Zealand, Japan, and South Korea, with some growth in awards made to international candidates, graduate enrolment in other countries with developing research infrastructures is increasing.

For example, Mohamedbhai (2020) notes that there has been a significant increase in doctoral enrolment in almost all African countries over the past decade. This has been driven and supported to some extent by policy commitments such as the *Dakar Declaration* (Trust Africa, 2015) on ensuring that 100% of academic staff in universities in Africa would have PhD by 2065. Initiatives such as international investment in doctoral programmes, and training through African and African-led doctoral schools and training hubs, e.g., CARTA, the African Doctoral Academy and the World Bank's African Centres of Excellence programme have also played a role in growing the doctoral community in Africa (British Council and DAAD, 2018). South Africa has focused on transforming the academy to include more black South African academics by developing the pipeline into postgraduate programmes and building capacity in doctoral training. The country produced on average 2400 doctoral graduates per annum between the 2014 and 2018 academic years (Statistics South Africa, 2019). The South African Department of Higher Education and Training is committed to growing PhD graduate numbers to 5000 per year and to have 75% of academic staff qualified to doctoral level by 2030 (Cloete et al., 2015). In the most recent annual report (DHET, 2020) 48% of academic staff in South Africa held a PhD. South Africa's funding formula

10. According to Herman and Serhoole (2017), 79% of all doctorates were graduated from nine, historically white, South African universities in 2014.

for doctoral programmes has also in recent years incentivised many more South African universities to enrol doctoral candidates where previously only nine, historically white South African universities had graduated the majority of doctorates.¹⁰

Quality and Standards

There is a trend towards convergence in the design and structure of doctoral programmes that has been noted in Europe (Hagsall et al., 2019) and attributed to globalisation of higher education over the past decade. The establishment of doctoral programmes in universities where research infrastructure, research leadership and supervision capacity are weaker is a major challenge across Africa (British Council and DAAD, 2018) and has given rise to several initiatives dedicated to quality and standards in the doctorate. South Africa's Council on Higher Education published a *Qualification Standard for Doctoral Degrees* in November 2018. This provided a framework for a national audit of standards and quality at doctoral level, which began in June 2019. In the East Africa region, the inter-university council for East Africa developed *Standards and Guidelines for Postgraduate Study*, which includes masters programmes. In Francophone West Africa, Licence-Maitresse-Doctorat reforms in Senegal have seen further restructuring and standardisation of doctoral provision across the region (Dimé, 2018).

Quality and standards have also been a recent focus of Indian doctoral education. A retrospective review of PhD research quality was commissioned as a result of the 2020 National Education Policy which committed to: (1) the introduction of credit-based courses in teaching and pedagogy with opportunities for doctoral candidates to engage in teaching assistantships; (2) the discontinuation of the MPhil; and (3) the development of multidisciplinary and professional practice-focused PhDs at all universities.

The third commitment speaks to a contested trend identified in certain countries and regions globally towards diversification of doctoral programmes to include professional doctorates, doctorates by practice, by publication, and work-based doctorates. There are acknowledged difficulties in ascertaining precise numbers of alternative form or format doctoral programmes as different higher education institutions categorise them in different ways and national-level data is unavailable in many countries.

Professional and Work-based Doctorates

Hawkes and Yerrabati (2018) note in their systematic review that much of the research literature relating to professional and work-based doctorates are based on programmes in the United Kingdom, the United States and Australia (13) which would suggest a historical focus on professional doctorate programmes in these countries. Based on the available data, Mellors-Bourne et al. identified growth in professional doctoral programmes in English higher education institutions in 2016, although House (2020) suggests that enrolments on professional doctorate programmes in the UK have halved between 2008 and 2018. Doctor of Education (EdD) has seen a particularly steep decline. Data on professional doctorate enrolment in the United States is not available as recipients of professional doctoral degrees are not included in the annual Survey of Earned Doctorates that is conducted by the National Science Foundation. Austin and Miller (2020) note that the Higher Learning Commission (one of six regional accreditors for higher education institutions in the United States) approved 31 new professional doctorate programmes by 2015, up from seven in 2010 (202). There are no publications detailing enrolments/awards of professional doctorates in Australia since 2014 (Wallace et al., 2014) which highlighted a fall in Doctorate of Business Administration (DBA) enrolment. However, there has been a recent policy focus

on industry-university collaboration in doctoral training content, which has been a key priority in the *Research Training Implementation Plan* (DESE, 2017) that was developed to respond to the findings of the *ACOLA Review of Research Training* (2016). Work on this priority has led to the publication of a set of overall *Principles to Guide Industry-University Collaboration in Graduate Research Training* (Australian Industry Group and Australian Council of Graduate Research, 2018) and activity to promote and support the development of collaborative doctoral programmes with industry partners, placements, and research internship schemes.

In Europe, the European Universities Association Council for Doctoral Education highlighted in 2019 the growing number of professional doctorates and industrial partners in doctoral research as one of the key strengths of doctoral education (UKCGE and EUA-CDE, 2019). Growth in professional doctorates in China is also projected. In 2020 the Chinese government made a policy commitment to expand enrolment for all professional postgraduate degrees, including professional doctoral programs, by 2025 in order to meet the needs of major national strategies in key fields. As of 2019, China had awarded 48,000 professional doctoral degrees. Africa has yet to develop the strong collaboration between university and industry required for professional doctorates (Jowi, 2021). South Africa is the most advanced in this regard with existing industry chairs and some student placement programmes. However, industrial sponsorship, industrial collaboration at scale in doctoral training and professional doctorates remain to be developed.

Mental Health and Wellbeing

Concern for the mental health and wellbeing of doctoral candidates is another trend in policy and practice across a number of countries and regions. The Council for Graduate Schools (CGS) report (JED Foundation and CGS, 2021) identifies common experiences within doctoral communities in the United States and Canada resulting from isolation, high levels of competition, long work hours, and discrimination. These experiences are reported also in a 2020 mental health survey of 13,000 junior researchers, (Cerejo et al., 2020), a 2017 study of 3659 doctoral candidates in Belgium (Levecque et al., 2017) and in a *Nature* 2019 survey of more than 6,000 PhD students.¹¹ The JED Foundation and CGS report contains recommendations which exemplify actions that are already underway in some universities in the UK, encouraged by the Office for Students Catalyst fund ‘Supporting mental health and wellbeing for postgraduate research students’ programme as well as a strategic focus on researcher mental health and wellbeing in the *UK Research and Development People and Culture Strategy*, at UKRI, and by the Wellcome Trust. These include: (1) ensuring doctoral candidates are included in university strategic plans regarding mental health and wellbeing; (2) prioritising diversity, equity and inclusion in decision-making; (3) creating campus spaces to acknowledge and discuss challenges and crises experienced directly by minoritized graduate students; (4) delivering training on graduate student mental health and wellbeing to supervisors and doctoral support staff; (5) reviewing time-to-degree requirements and duration of funding to promote both work/life balance and the highest levels of academic performance; (6) exploring ways to recognise the quality of mentoring provided by supervisors in annual performance reviews; (7) addressing issues relating to mental

11. Winter et al. (2021) offers a single example of a study of doctoral candidates’ mental health and well-being, located in New Zealand, which does not suggest increased levels of mental health issues related to undertaking a doctorate. One possible explanation for this may be the increased standard time to completion of doctorates in New Zealand with associated reductions in time pressure

health and well-being in doctoral induction; and (8) providing support for research to better understand graduate student mental health and wellbeing, especially challenges and barriers experienced by underrepresented and underserved groups of graduate students.

potentially greater and more complex support needs may amplify support provided by graduate schools or equivalent in many countries, increase faculty efforts, and demand greater departmental resources to ensure well-being, high-quality research outcomes and timely doctoral completions (Chiappa and Perez Meijas, 2019).

Doctoral Education and Social Justice

Related in some ways to recent engagement with mental health and wellbeing, which has raised diversity and inclusion up the priority list, there is also some evidence of a growing recognition of the potential that doctoral education has to enable a fairer and more just society (McKenna, 2017; *Hannover Recommendations*, 2019; Deem, 2020). In some countries there has been a notable rise in the national discourse on social justice and inclusion at doctoral level. In the South African context, the New Generation of Academic Practitioners (nGAP) programme has set out to increase significantly the number of black and women researchers undertaking PhDs while working in a first academic role, with a view to diversifying the academic pipeline. In Australia, the *Research Training Implementation Plan* (DESE, 2017) contains a priority on equity in doctoral education which includes actions associated with better data collection on and support for participation in doctoral education by Indigenous communities and low socio-economic groups. In practice, the EUA-CDE report (Hagsall et al., 2019) records applications and admissions criteria set by European universities' focus on the future research potential of doctoral candidates (e.g. interviews, research proposals, and presentation of research ideas) rather than previous achievements such as grades in past exams or the master thesis. This move away from admitting a homogeneous community of 'lowest-risk' doctoral candidates from higher-ranked institutions with top degree classifications, rather than considering the future potential of applicants from more diverse backgrounds with

5. The 2021 Survey

Methodology

The aim of the 2021 survey was to produce an authoritative national overview of how postgraduate and research education is organised within higher education institutions. Further, the aim was to allow for comparisons over time and space, specifically with previous UKCGE sector surveys and the European Universities Association Council for Doctoral Education 2019 survey, 'Doctoral education in Europe today: approaches and institutional structures' (Hagsall et al., 2019).

The online survey was sent out electronically in November 2020 to all 140 institutions who were full members of the UK Council for Graduate Education at the time. This was sent as an individual e-mail inviting participation in the survey as well as via follow-up requests circulated via UKCGE newsletters and social media. Non-members of

UKCGE and non-respondents from research degree awarding institutions were contacted individually and invited to complete the survey before the final closing date of Friday 16th July 2021. The window for completing the survey was extended twice due to a low initial response rate, which may have been related to the exceptional circumstances brought about by the pandemic and the pressure on staff time. The final response rate from those sent the survey and those directly approached and invited to complete the survey was 45% (74 responses from 165). This compared favourably with the preceding UKCGE surveys which underpinned previous reports. Respondents were evenly distributed across pre-1992 (50%) and post-1992 (50%) institutions in the UK. 33% of research degree awarding institutions in Ireland completed the survey. The table below summarises the number of responding institutions in bands by size of postgraduate researcher population.

Number of postgraduate researchers enrolled	Number of responding institutions
0-500	18
501- 1000	28
1001 – 2000	12
2001 – 3000	7
3001 – 4000	3
4001 – 5000	3
5001 – 6000	2
over 6000	1

Table 4: Number of responding institutions by size of postgraduate researcher population. Source: HESA 2020/21.

Following the closing date, web searches were conducted for those institutions who did not respond to ascertain publicly available data on the structures and staffing related to the delivery of doctoral education in those organisations. These data have been added into the results of questions 4 to 7 to provide the fullest picture possible.

The survey consists of two parts. The first focuses on institutional structures which support postgraduate and research education including their size, position, remit, leadership, and the role these structural entities (graduate schools or equivalent) play in specific areas, such as recruitment, training, quality and standards, ethics and integrity, international collaborations, and wellbeing. Part One also elicits data on PGR population size and future aspirations

for consolidation or growth within institutional doctoral communities. The questions in the first part of the survey are largely derived directly from the surveys that underpin previous reviews of graduate schools in this series. A small number of questions have been slightly re-framed to allow more direct comparison with the findings of the EUA-CDE report (Hagsall et al., 2019). The second part of the survey investigates institutional strategies for doctoral education, exploring the contemporary challenges and opportunities for doctoral education that were highlighted by the respondents and looking at how the development of institutional policy and practice in key areas was prioritised. Part Two closes with questions on the current and future implications of the Covid-19 pandemic on individual institutions. This part of the survey has been redesigned and extended. It builds from the 2015 survey to explore more fully the breadth of the remit of graduate schools or equivalent structures and the evolving institutional strategies for doctoral education in a more comprehensive way than the earlier UKCGE surveys did.

As with the previous surveys, the email that accompanied the survey link requested that the most appropriate person to provide a definitive statement on institutional structures and strategy related to doctoral education complete it. However, it is recognised that the way some respondents answered may not always accord with how others might represent their organisation's structure or strategic intent. Variance in terminology may also have given rise to certain inaccuracies in the data. The authors endeavoured to mitigate risks of misinterpretation by providing respondents with a means to annotate their answers if the questions did not fit their local circumstances well and by providing a copy of the survey in its entirety in advance where this was requested so that institutions could make an informed decision on the best person to complete it. There were few such requests or annotations. Where annotated responses were given, these have moderated how the data have been interpreted and presented in the results and analysis sections.

6. Results

The results have not been grouped to differentiate between respondent universities with ‘Graduate Schools’ and those with ‘Doctoral Colleges’, as was presented in the 2015 report. This is because the data from the 2021 survey have not shown that there is currently any clear distinction in role or remit between them. Moreover, 2021 findings reveal that since 2015 there has been a growing number of terms used by institutions to describe the organisational unit(s) with responsibility for doctoral education. The data also show no association between pre- and post-92 universities and either term (see Table 5a). Comparing the survey data between these two groups of universities revealed few distinct differences in structure or strategy between more research intensive and more business-focused universities. Therefore, the results presented have not been disaggregated in results tables beyond Table 5a. Particular distinctions between responses by size of PGR population, which in many cases can be a proxy measure for research intensity, has been noted in the text.

Where additional information for non-responding institutions could be obtained from web searches that were conducted after the survey closed, these have been included in the tables 5a-c and 6 below. When comparisons are made with previous surveys it should be noted that prior to the 2015 survey, no web searches were conducted to determine structures within non-responding institutions.

The preamble to the survey and questions one, two and three asked respondents to state their name, job title and institution. Question four required respondents to name the largest organisational structure in their university that supports doctoral

education.

Table 5b shows that 75% of research degree awarding institutions in the UK and Ireland for whom data were available have a structure that supports the delivery of doctoral education. Specialist colleges (n=13) were the predominant type of institution that did not have a specific structure. This could be attributed to their size. When specialist colleges are excluded from the data, the number of institutions that have a specific structure to support the delivery of doctoral education increases to 80%. ‘Graduate’ remained the most common term for this organisational structure despite the emergence

	UK Pre-92	UK Post-92	Irish	Total
Graduate School	15	25	2	42
Doctoral College	17	11	-	28
Doctoral School	7	3	-	10
Doctoral Academy	4	2	-	6
Other – graduate-focused	3	8	7	18
Other – doctoral-focused	2	3	-	5
Other – PhD-focused	1	-	-	1
Other	7	7	1	13

Table 5a Largest organisational structure. (n=123)

	1994 Survey	1998 Survey	2004 Survey	2009 Survey	2015 Survey	2021 Survey	2021
Percentage of institutions with a structure supporting doctoral education	38%	50%	65%	76%	70%	75%	80%

Table 5b: Progression in the percentage of institutions with structures supporting doctoral education since 1995

of a range of new names including PhD Academy, Doctoral Academy, and Doctoral Research School.

Respondents were also asked to indicate at what level this structure sat within their organisation (Question six). Table 5c shows that in the majority of cases the largest organisational structure with responsibility for doctoral education is located at an institutional level, although 19% did not have a central unit.

The 2015 survey reported a more complex organisation of graduate schools or equivalent units at various levels within institutions. For example, in some instances a single institution would have graduate schools at a combination of faculty, school,

	Total
Institution	81%
Cross faculty	2.5%
Faculty	2%
Department	6%
Cross Discipline	1%
School	5%
Other	2.5%

Table 5c: Level at which this structure sits within the organisation. (n=123)

departmental and discipline level. The 2021 survey results indicate some rationalisation and a shift towards centralised structures, even if more local provision remains in some cases.

Question five sought information on which groups were served by the graduate schools or equivalent. Table 6 shows some clear trends away from support for taught masters and towards research staff since 2015. Figure 3 show the institutions as indicating ‘other’ within the remit of their graduate schools or equivalent identified specific support for

Remit	UK institutions	Irish institutions	Total
Doctoral candidates	113 (100%)	10 (100%)	123
Masters by research students	79 (70%)	6 (60%)	85
Taught masters students	10 (9%)	2 (20%)	12
Early career researchers	46 (41%)	4 (40%)	50
All research staff	30 (27%)	4 (40%)	34
Other	11 (10%)	1(10%)	12

Table 6: Which of the following groups fall within the remit of this organisational structure? (n=123)

Professional Doctorate and Masters of Philosophy.

Whilst the 2015 review reported that only 17.4% of institutions included in the survey or web search data had graduate schools or equivalent that supported early career researchers, the 2021 data show a strong shift to expanding their support towards early career researchers (40.7%) and all research staff (27.6%). Free text responses in 2021 also highlighted new support for supervisors along with supervisory training and development. At the same time, the data show just 9% of UK institutions and 20% of Irish institutions now provide support for taught masters students through their graduate schools. This continues a trend that was highlighted in the 2015 report of taught postgraduate programmes being a diminishing concern in graduate schools.

Question seven considers the number of full-time equivalent (FTE) staff employed directly in graduate schools or similar structures. The majority

of institutional structures that supported doctoral education had a staff base of between six and ten FTE.

The data showed no correlation between the name of the unit and its size nor a preference for a particular size of unit according to type of university, e.g., research-intensive, specialist or business-focused. As the data in the table indicate, there was a large range in PGR population count for each size of unit (as categorised by FTE). Several institutions who reported units of over 20 FTE had incorporated support for doctoral education into their research operations structures. 13 institutions with more than a thousand PGR (HESA, 2019-20) had five or fewer FTE staff located in their graduate school or equivalent. In most of these cases, free text responses suggested that PGR support staff were dispersed across the institution. Conversely, there were two institutions with fewer than 700 PGR who had more than 20 FTE in a graduate school or equivalent.

Number of PGR registered by HESA/HEA Ireland	Number of FTE staff				
	0-2	3-5	6-10	11-20	Over 20
0-500	3	8	4		2
501-1000	5	4	14	4	1
1001-2000	3	1	4	1	2
2001-3000	2		2	2	3
3001-4000		1		1	
4001-5000		1	2	1	
5001-6000	1				1
Over 6000		1			

Table 7: How many full-time equivalent staff are employed within this organisational structure? (n=74)

Question eight considers leadership within graduate schools or equivalent. The table below includes survey responses and data generated by web search.

The predominant leadership model is that of Director at 1.0 FTE. However, there is some variation in leadership pattern between types of institution and consequently size of PGR population. Directors provided leadership for 77% of all units in institutions with fewer than a thousand PGR.

Leadership was typically represented as being provided by a single person. However, 9% of institutions reported co-leadership with more than one role, typically including the deputy vice-chancellor research or equivalent. One institution used the free text response to describe a ‘PGR Executive Body’ with responsibility for leadership, which comprised four Deans of Graduate Studies, a PGR Strategy Manager, the Head of Research Policy and a Vice-President Research. 46% of responding institutions reported leadership provided by 1.0 FTE or greater. 41% of responding institutions reported that leadership provided by a Director was 0.5 FTE or less compared to 33% with a Dean. Size of PGR population was not correlated with FTE of leadership.

Question nine asked respondents to provide the top five, ranked strategic priorities in order of importance for their graduate school or equivalent. The question permitted them to select more than

one activity for each level of priority if appropriate. There was wide variation across responses which is captured in Figures 4 and 5.

The top five strategic priorities reported were PGR health and wellbeing, student satisfaction, career development, improving quality of supervision, and funding for doctoral education.

Dean	Director	PVC Research	DVC Research	Registrar	Other
36%	38%	11%	5%	1%	9%
					Predominantly Assistant /Associate Pro Vice-Chancellor/ Pro Vice-Chancellor Research –5% Vice-Provost /Provost 3% Principal 1%

Table 8: Who provides leadership within this organisational structure? (n=70)

	1st strategic priority	2nd strategic priority	3rd strategic priority	4th strategic priority	5th strategic priority	A strategic priority but not in the top 5	Not selected as a strategic priority	Top 5
Funding of doctoral education	12	10	6	3	2	21	21	61%
Research ethics	2	4	5	2	2	21	39	42%
Attracting doctoral candidates from overseas	4	5	3	2	1	27	33	42%
Career development of doctoral candidates	11	13	7	7	10	19	7	72%
Equality, diversity and inclusion	8	5	4	11	4	22	21	59%
Open access/open science	0	1	4	0	2	23	45	23%
Health and wellbeing of doctoral candidates	10	10	10	6	12	16	11	75%
Increasing the number of doctoral candidates	12	4	5	5	5	23	20	58%
Industry partnerships within doctoral education	0	5	2	5	4	24	35	40%
Societal engagement with doctoral candidates	0	2	2	1	2	23	45	23%
Student satisfaction	21	10	6	4	7	17	9	74%
Enhancing the quality and profile of supervision	6	10	13	7	8	21	9	68%
Improving submission and completion rates	8	8	5	8	3	24	19	57%
Implementation of the concordat for researchers, enhancement/development of research culture	6	5	7	2	4	28	23	46%
Internal profile-raising of the needs of the doctoral community	9	3	10	8	1	22	21	59%
External marketing of doctoral programmes	0	2	2	5	5	28	32	35%

Figure 3: Heat map of strategic priorities (n=74)

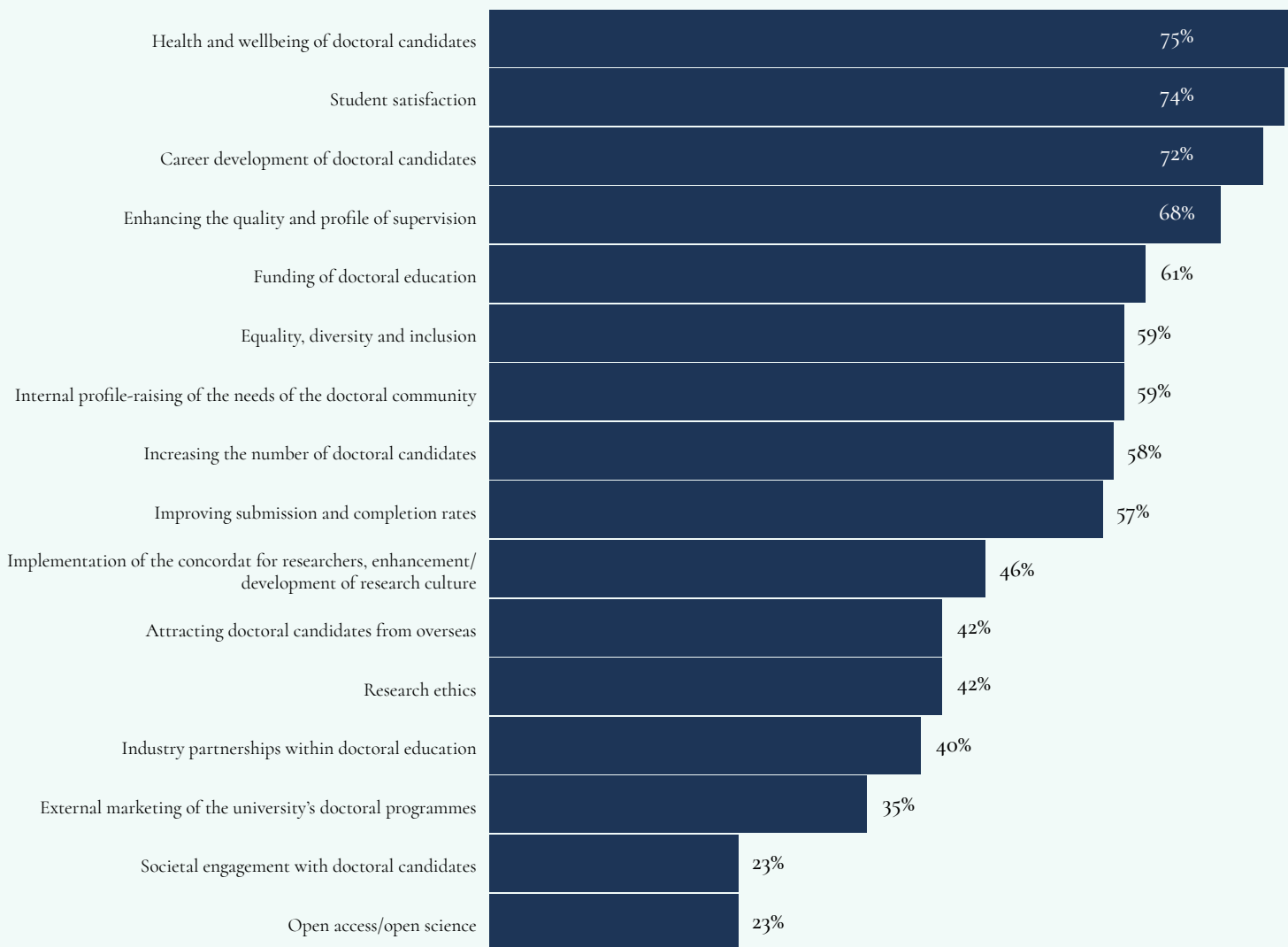


Figure 4: Percentage of respondents indicating themes as a top 5 strategic priority (n=74)

Research ethics, international recruitment, open access/open science, industry partnerships in the doctoral context, public engagement with doctoral research, and external marketing of doctoral programmes were not consistently highly ranked as strategic priorities within graduate schools or equivalent. This may be because other parts of institutions were considered to have responsibility for these activities. It is notable that equality, diversity and inclusion in doctoral education and PGR population growth are ranked generally by respondents as lower strategic priorities despite these areas being closely aligned with the remit of most graduate schools or equivalent and equality, diversity and inclusion currently having a high policy profile.

Implementation of the research concordat was a top three strategic priority for only 46% of respondents where the graduate school or equivalent structure had a reported remit for early career researchers or research staff. This might suggest some continued unevenness in engagement with the concordat (revised and published in 2019), which is consistent with the findings of the independent review of the original concordat, carried out in 2018 (Bogle, 2018).

Question ten explores how graduate schools or equivalent are funded. Responses were in free text form and the terminology varied. The majority of respondents (n=72) indicated 'central' or 'institutional' funding, at least in part. 18% of responses cited more than one funding source, which included:

- government funding, comprising 'Quality Related' (QR) funding or 'Research Degree Programme' (RDP) funding (13%)
- PGR fees (7%)
- Top-slice from Departments, Schools or Faculties (7%)
- External funding, including research grants and fixed-term projects (7%)

Question 11 asked respondents to consider to what extent a range of indicators were used to evaluate doctoral education in their institution. The responses are presented in ranked order of importance in Table 10 below.

The top five ranked indicators reflect to some extent the strategic priorities in Figure 4. Internal and external surveys are a measure of student satisfaction and may to some extent be the most appropriate current measure for PGR health and wellbeing also. Submission and completion rates are equally perhaps the most appropriate current measure for quality of supervision.

However, despite career development being reported as a significant strategic priority (top 5 for 79% of respondents) it is notable that career outcomes do not rank highly as a measure for doctoral education. This may be related to a lack of robust data on PGR career destinations, either at institutional or sector level. Conversely, whilst diversity of the doctoral population ranked fifth in terms of most common measures, equality, diversity and inclusion did not rank highly as a strategic priority.

Other measures related to progression in-programme

(rather than submission and completion rates), such as suspension, elicited a divided response with relatively high levels of respondents reporting frequent use (institutions with <1000 PGR) and rare use (institutions with >1000 PGR) respectively. Levels of internationalisation brought about a similarly divided approach. This was reported as in more frequent use (always/usually) in institutions with PGR population from 250-999. Measures related to economic and social relevance of doctoral education were commonly reported as rarely or never used across all types of institution.

Respondents also had the opportunity to add free text to mention other indicators that were used by their institutions. Annual progression rates, registration numbers for researcher development activity, PGR to supervisor ratios, viva outcomes, and numbers of formal complaints and appeals were most common.

Respondents were then invited to comment on how these indicators feed into the mechanism for change. The responses commonly described formal reporting mechanisms, such as annual monitoring and periodic review/validation. Measures were sometimes used as performance indicators. In these cases, progress against these indicators was regularly monitored by governance committees. These committees were usually related to doctoral education and research; examples include Graduate Board, Research Degree Committee, Research Committee. However, in some institutions, governance of doctoral education was embedded across committees with a broader remit, such as quality or student experience and so progress against different measures was reported to a range of committees. One institution emphasised the important role of an active Graduate Council as a dynamic vehicle for eliciting regular feedback and implementing change.

	Always	Usually	Occasionally	Rarely	Never	No answer
Submission rates of doctoral candidates	46	22	3	3	0	0
The satisfaction of doctoral candidates as shown in national surveys i.e. PRES	45	21	4	1	3	0
Completion rates of doctoral candidates	43	21	7	2	1	0
The satisfaction of doctoral candidates as shown in internal surveys	37	15	15	3	3	1
Diversity of doctoral population	16	20	31	5	2	0
Qualitative indicators (e.g. peer review, evaluation committees)	15	18	15	12	9	5
Level of competitive funding received	10	22	17	12	9	4
Career outcomes of doctoral graduates	5	24	28	8	7	2
Suspension/interruption rate	11	18	20	13	19	3
Levels of internationalisation	2	20	22	16	11	3
Relevance for society	2	16	24	15	13	4
Number of fall-back awards	8	8	10	23	17	8
Academic publications by doctoral candidates	2	12	22	14	19	5
Relevance for the economy	0	10	25	20	13	6

Table 10: Evaluation indicators used by graduate schools or equivalent in ranked order of importance

At Question 12 the survey sought to gauge a sense of institutional strategy around PGR population size. The responses are summarised in Table 11.

	Doctoral	MRes
Decrease	2	2
Remain the same	15	35
Increase	57	32

Table 11: Number of responding institutions with targets for their PGR populations to decrease, increase or remain the same. N=74

77% of institutions indicated that they intend to increase the size of their PGR population over the next 5-10 years. 43% indicated an intention to increase MRes registrations also. Where the percentage increase was specified, the mean average increase for the doctoral population (n=43) was calculated at 53% over five years (median 27.5%); for Masters by Research (n=23) this was 30%.¹²

Respondents were asked to explain the rationale behind their institutional targets (n=56). The constraints highlighted within the responses included Covid-19 (1), Brexit (2), supervisor capacity (3), and their ability to ensure the quality of the student experience (3). Nine respondents referenced the use of sector comparison data in setting institutional targets. PGR population growth was described as an enabler for building the research base (7), enhancing research profile (5), improving research culture (7), and increasing the attractiveness of the institution as a partner on doctoral training consortia (2). Some respondents highlighted the

need for additional funding to support more PGR studentships (10), whilst others highlighted the potential for a growing PGR population to increase institutional research income (2). One institution highlighted the low Transparent Approach to Costing (TRAC) data recovery rate on PGR as an additional constraint on PGR growth. Three respondents underlined the importance of quality over quantity, whilst many suggested that increasing diversity in the PGR population was an important driver for growth (9).

Three respondents from Irish institutions cited the national target set by the Irish government to increase the research student profile from 4% to 7% of total student enrolment within a ten-year timeframe from the new designation of technological universities. Only one respondent suggested diversification of doctoral programmes (to include professional doctorates) was a driver for increased PGR numbers. Seven responding institutions suggested that growth in research over the last and next cycles of the Research Excellence Framework (REF) would inevitably lead to greater supervision capacity and therefore expansion of the PGR population. Three responses referenced the need to train the next generation with the research skills to contribute to academia or to economic growth through career destinations outside of higher education.

12. Calculated by using midpoint where a range was given (3/43), for example 10-15% increase, and by converting annual increase targets, for example 5% per annum, to five-year consolidated increases (4/43).

Question 13 moves on to explore the remit for graduate schools or equivalent.¹³ The responses are summarised in Table 12.

The responses show a high degree of involvement of graduate schools or equivalent in advocacy (representing doctoral/graduate issues within the institution, central co-ordination of responses to national consultations, gathering and acting upon feedback, and liaison with student organisations), progression monitoring and enhancement of submission/completion rates, and training and development of PGR and supervisors. Graduate schools or equivalent are also highly involved in the development of new doctoral programmes, including at-distance and professional doctorates. 38% of respondents reported a high degree of involvement with the delivery of support for new international programmes including dual award or cotutelle arrangements.

However, other aspects of internationalising doctoral education appeared to be predominantly supported outside of graduate schools or equivalent. 44% of respondents indicated that the graduate school had low or no involvement in supporting international mobility activity and 62% reported that the graduate school had medium or low involvement with the development of new international collaborations at a doctoral level. Specialist learning support for international postgraduate researchers was also mostly located outside of graduate schools (53% reported low or no involvement).

Although career development is reported as a top five strategic priority in Figure 4, few respondents reported high levels of involvement in the delivery of careers-related support, such as providing career information and monitoring destination data. This is likely delivered directly by careers services in partnership with graduate schools. Conversely, whilst graduate schools reported a high level of involvement in research ethics and integrity training, research ethics was not reported as a strategic priority for the majority of responding graduate schools at Question 9.

It is interesting to note that although 93% of responding institutions reported that the graduate school or equivalent had a high or medium level of involvement in PGR mental health and well-being, involvement in the provision of space, social events and activities for PGR was much more distributed across institutions with 33% of respondents reporting low or no involvement in the provision of social events and activities, and 34% reporting low or no involvement in providing study or social spaces. Practical solutions to assist PGR mental health and well-being through community spaces and events potentially therefore rely on the advocacy role played by graduate schools rather than the direct provision of graduate school services to the doctoral community in this regard.

13. Question 24 gives respondents the opportunity to report any additional areas of activity in which their graduate schools or equivalent are involved via a free text response. Although most respondents did not answer or confirmed that all activities had already been addressed within the survey, some responding institutions highlighted additional activities. These include: bid development for DTPs, post-award funding management including with international sponsors, assessment/examination, development and implementation of new research degree strategy, regulations, policy and guidance, PGR employment, mediation in PGR/supervisor working relationships, engagement with UK-wide bodies, providing management information for internal planning departments and directly to HESA, budget management and resource allocation. In some cases where the graduate school or equivalent had responsibility for research staff they reported additional responsibility for building a cross-university research community and culture. Where graduate school function was embedded with wider research services units, respondents reported additional activity across REF and research infrastructure, research funding, research impact, intellectual property, research ethics and higher academic awards.

Areas of Activity	% of responses aligned with specified level of involvement			
	High	Medium	Low	None
Development of new postgraduate programmes (Doctoral and Masters level)	53	29	15	3
Development of Professional Doctorates	48	21	21	9
Development of new campus-based PGR programmes	50	27	15	8
Development of at-distance PGR programmes	46	24	18	12
Developing pre-doctoral bridging programmes	14	26	24	36
Supporting the development of international cotutelle programmes (dual/joint award)	38	20	23	19
Promoting and improving mobility opportunities	18	38	32	12
Supporting doctoral training programme grant capture	36	39	18	7
Enhancing the offer to attract high-quality research staff	11	18	42	30
Representing graduate/doctoral issues within the institution	92	7	1	0
Developing international collaborations	30	35	27	9
Website - internal and/or external	55	36	9	0
Liaison with student organisations	69	21	8	1
Liaison with employers/industry etc	9	37	40	13
Liaison with funders	29	40	21	9
Publicity/Postgraduate prospectus	29	56	12	3
Registration/matriculation	48	20	13	19
Student records	54	18	18	11
Award of studentships	54	27	11	8
Admissions and recruitment	40	25	28	7
Monitoring progress of PGRs	67	23	8	3
Quality assurance/monitoring	72	23	5	0
Central co-ordination of responses to national consultations	76	24	1	0
Preparing returns to HESA (Higher Education Statistics Agency), funding councils etc.	27	40	24	9
Gathering and acting upon opinions of PGRs	89	11	0	0
Improving the postgraduate experience	92	8	0	0
Programme reviews	39	39	18	4
Other quality assurance of graduate/doctoral programmes	68	24	7	1
Improving research progression, submission and completion rates	77	20	3	0
Considering complaints and appeals	47	28	20	5
Compliance with ethics regulations	31	40	23	7
Promoting the research ethics and integrity agenda	59	32	8	1

Figure 5: Heatmap of reported level of involvement of graduate schools or equivalent in common areas of activity related to support for postgraduate, early-career researcher and research staff. (n=72-74)

Areas of Activity (continued)	% of responses aligned with specified level of involvement			
	High	Medium	Low	None
Supervisor training & development	84	15	1	0
Supporting ECRs	23	30	30	18
Supporting middle career researchers through to Professor	12	15	27	46
Supporting PGR employability	35	47	17	1
Supporting the mental health and wellbeing of PGRs	64	29	5	1
Supporting the mental health and wellbeing of research staff	8	20	36	35
Research ethics and integrity training	57	29	12	1
Provision of learning resources for doctoral researchers	66	25	9	0
Research methods training	45	40	13	1
Generic skills training	81	15	3	1
Teaching training	20	39	33	8
Arranging and managing placements and internships	5	19	40	36
Learning support for international doctoral researchers	19	28	41	12
Social events/activities	33	33	28	5
Providing dedicated space (social, study) for doctoral researchers	35	32	19	15
Providing career information	12	45	35	8
Monitoring career destinations	8	24	43	25

Figure 5 (continued): Heatmap of reported level of involvement of graduate schools or equivalent in common areas of activity related to support for postgraduate, early-career researcher and research staff. (n=72-74)

Question 20 to 23 had a specific focus on organisational strategy related to equality, diversity and inclusion. Respondents were first asked if equality, diversity and inclusion (EDI) at PGR level is an explicit consideration in strategic decision-making within their graduate schools or equivalent. In contrast to the earlier questions where EDI was not featured as a top five priority, 84% of respondents (n=75) reported here that it was used in decision-making. This might suggest that EDI considerations are becoming embedded in ways of working rather than being a strategic priority in their own right. The following question (21) explored the data that responding institutions were collecting and analysing to inform this decision-making through free text response. These responses were then coded and counted to provide the summary in

Table 12 below.

24% of respondents did not specify which metrics they were currently using, and 21% stated that their metrics were currently in development. Gender (35%) and ethnicity (32%) of application data (23%) were the most frequently reported EDI metrics captured by respondent institutions. 21% used disability data. Only 15% reported collecting and analysing EDI data in relation to completion rates and only 8% captured student experience data in this way, in order to inform decision-making. These data were typically used for monitoring against key performance indicators and targets and internal action plans and had committee oversight. Use of additional external benchmarks was also reported in some cases and these included HESA data and PRES outcomes.

	Number of individual responses by specified metric	% respondents by metric
Gender	22	35
Ethnicity	20	32
Application	14	23
Disability	13	21
Admission	12	19
Age	11	18
Completion	9	15
Progression	8	13
Offer	5	8
Experience	5	8
All protected characteristics	4	6
Submission	4	6
Award	4	6
Retention/Withdrawal	3	5
PRES	3	5
Nationality	2	3
Domicile	2	3
Study mode	2	3
Conversion	2	3
Funding	2	3
External benchmark	2	3
Intersectionality	1	2
Interview	1	2
Examination	1	2
Destination	1	2
Supervisory team composition	1	2
<i>None specified</i>	15	24
<i>Metrics in development</i>	13	21
<i>Targeted groups</i>	2	3

Table 12: Equality, Diversity and Inclusion metrics used by respondents. N=67. *Where responses specified 'all protected characteristics', gender, ethnicity, disability and age were also individually recorded in order not to under-represent the prevalence of the use of these metrics.

Respondents were then invited to return a free text response on the general trends which have been identified within their graduate school or equivalent in relation to equality, diversity and inclusion at postgraduate research level over the past five years. Responses were again coded into nine broad categories and 20 specific subcategories and counted to provide a summary.

The picture of trends that have been observed within UK and Irish institutions was mixed. 16% of responses reported that monitoring was still in development and offered no further information on observed trends. A further 16% of responses reported no significant change in the profile of the PGR population whilst 18% reported an increase in participation of PGR who identify as female. Just 4% noted an increase in representation amongst racialised groups in the last five years. This is not entirely aligned with the HESA data which shows that the UK-Domiciled PGR population from Black, Asian and minority ethnic groups has increased from 15.8% of the total PGR population in 2013/2014 to 20% in 2020/2021. 12% of respondents referred to a notable trend towards implementation of targeted policies and projects designed at an institutional level to address and promote diverse and inclusive postgraduate research communities.

Question 23 asked which measures have been implemented in relation to EDI at PGR level over the past five years. Respondents could tick all that applied and 39% of responding institutions reported implementing more than one measure. The results are summarised in Table 13. Other measures reported include a more targeted focus on recruitment and the admissions process for underrepresented groups, as well as more support provisions and mentoring for PGR.

Question 26 asked respondents to report on any other structures in their institution which supported postgraduate researchers in addition to the main structure they had identified at the beginning of the survey. 73% of responses (n=74) indicated the use of structures ranging from a portfolio of doctoral training partnerships or centres for doctoral training, through academic leadership for postgraduate researchers or research degree committees located at Faculty or school-level, to PGR administrative support at Faculty, School, Centre or Department level. Other responses included PGR-specific career support services and PGR-focused library services.

Raising awareness of postgraduate opportunities among widening participation undergraduates	54%
Targeted funding opportunities	45%
Pre-enrolment bridging activities	22%
None	18%
Other	18%

Table 13: Measures implemented over the past five years to support equality, diversity and inclusion in doctoral education. (n=74)

The final few questions of this section of the survey focused on changes that had occurred at institutional level within structures supporting doctoral provision and explored the main internal drivers.

Question 27 elicited the top three key changes over the past five years through free text responses. There were 195 responses that could be coded in total from 71 responding universities. Responses were grouped into six categories and 29 subcategories. The six categories covered the following changes: structural (25%), functional (53%), staffing (24%), governance (7%), funding (5%) and engagement (3%). Creation of new structures, changes to senior management staffing and structure, and changes in the remit of the graduate school or equivalent structure (predominantly expansion) were most frequently referenced. 13 responding institutions referenced additional specialist posts as a key change. These were in areas such as mental health and well-being, and careers. 11 institutions reported centralisation of PGR support. Relocation of graduate school or equivalent and/or additional physical space, creation of additional structures at faculty or school level, training enhancement, expanding online provision, introduction of new governance, new regulations and policies, and additional investment were all smaller trends (referenced by six to eight responding institutions).

Respondents were then asked to indicate, from a predefined list, their opinion on the main internal drivers that brought these changes about. Responses are summarised in Table 14.

Where respondents answered 'other' (n=21) they were asked to specify further. The majority of these responses were clustered around changes in research strategy, sector benchmarking, and the growing strategic importance of postgraduate researchers within the institution.

The external drivers for the top three key changes are summarised in Table 15.

Institutional reorganisation	45 (63%)
PGR recruitment strategy	36 (51%)
Support for trans/cross/inter-disciplinary research	30 (42%)
Growth and diversification of programmes	22 (31%)
Other	21 (30%)
Enterprise & innovation strategy	18 (25%)
International strategy	18 (25%)
Professional doctorates	4 (6%)
None	1 (1%)

Table 14: Main internal drivers for top three key changes in doctoral provision over the past 5 years (n=71)

Multi answer: Percentage of respondents who selected each answer option (e.g., 100% would show that all respondents chose that option).

Changes in national/international policy	34 (49%)
Mental health & wellbeing	32 (46%)
Equality, diversity & inclusion	30 (44%)
Changes in funding	30 (44%)
Covid-19	20 (29%)
None	12 (17%)
Industrial strategy	10 (15%)
Other	7 (10%)
Global Challenges Research Fund	3 (4%)

Table 15: Main external drivers for top three key changes in doctoral provision over the past 5 years. (n=69)

The remainder of the questions within the survey from Question 31 onwards mirror those from the European University Association Council for Doctoral Education (EUA-CDE) report and survey *Doctoral Education in Europe today: Approaches and Institutional Structures* (2018).

Question 31 explores the extent to which doctoral programmes were organised at disciplinary, faculty and thematic level (see figure 6). Respondents were asked to tick all levels that applied. 59% of respondent institutions (n=73) reported programmes operating at all three levels. Overall, institutions reported that all or most of their doctoral

programmes were organised at disciplinary (71%) and faculty (51%) level. Only 16% overall reported that all or most of their programmes were organised at a thematic level. However, institutions with 1000 PGR or more were much more likely to report all or most of their programmes operating at the thematic level (88%) than institutions with <1000 PGR (22%).

Question 32 (see figure 7) focuses on how rules or guidelines were shaping requirements, content, and assessment. Irish respondent institutions reported rules and guidelines governing all four aspects of doctoral training covered by the question. This aligned most closely with the responses from the

Disciplinary Level



Faculty Level



Themes or Societal Challenges

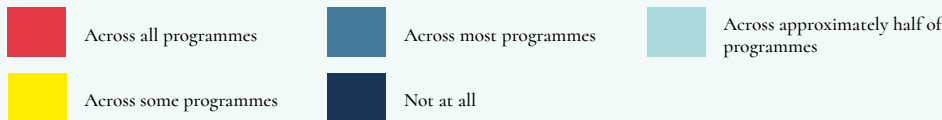


Figure 6: The extent to which doctoral education in the institution is organised around levels or themes.

Defining what is required in or of doctoral training programmes



The contents of doctoral training programmes



Assessment of training activities



Credits

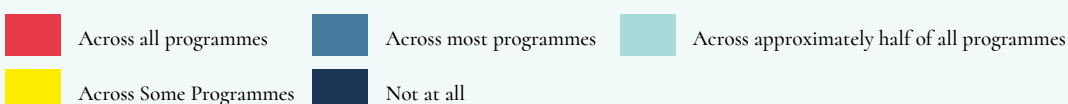


Figure 7: Guidelines for elements of doctoral education.

EUA-CDE report. UK respondent institutions, on the other hand, reported lower levels of rules or guidelines in every aspect. 49% of UK respondent institutions reported no rules or guidelines related to credits and 12% related to assessment of training activities.

Questions 33 and 34 asked respondents to report on the average time to completion (successful attainment of award) of full-time doctoral study across their institution and how this had changed over the last 5 years. 32% of all responding institutions (n=71) reported average completion time of between three and four years (see figure 8 below). Time to completion in respondents in the UK and Ireland was significantly shorter on average than amongst respondents to the EUA-CDE 2019 survey. (See figure 8a).

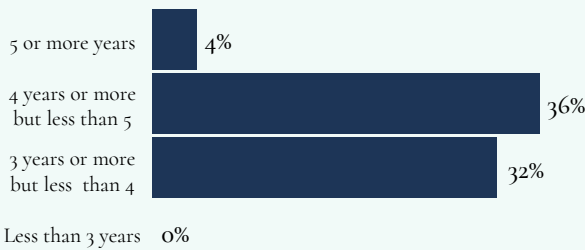


Figure 8: In your institution how long do your graduates on average take to complete their full-time doctoral studies (years)?

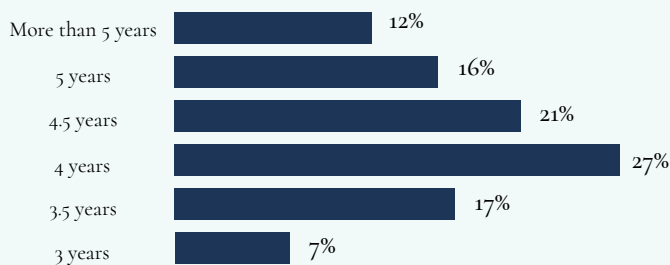


Figure 8a: For comparison: excerpt from EUA-CDE *Doctoral Education in Europe today: approaches and institutional structures* (2019) “In your institution how long do your graduates on average take to complete their full-time doctoral studies (years)?” (Reproduced with kind permission from EUA-CDE)

34% reported an average completion time between four and five years. There were no significant differences in average time to completion across responding institutions with a range of postgraduate research population sizes.

83% of responding institutions reported that their average time to completion had remained the same or decreased in the last five years (see figure 9). Respondent institutions with smaller PGR populations (<1000) were more likely to report a decrease in completion time (49% responses),

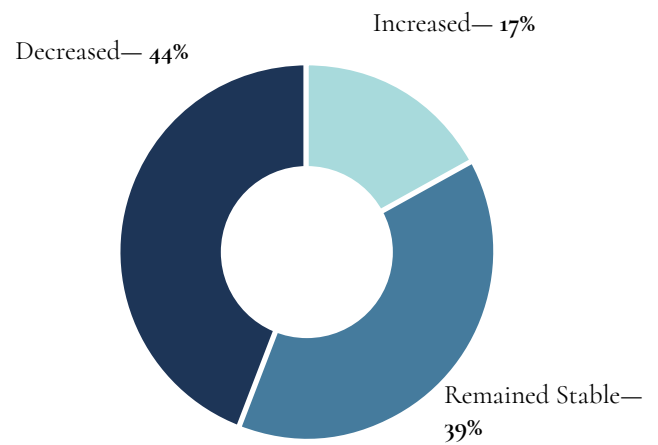


Figure 9: Compared to ten years ago, in your institution has the average time to complete a doctoral programme, decreased, remained stable or increased?

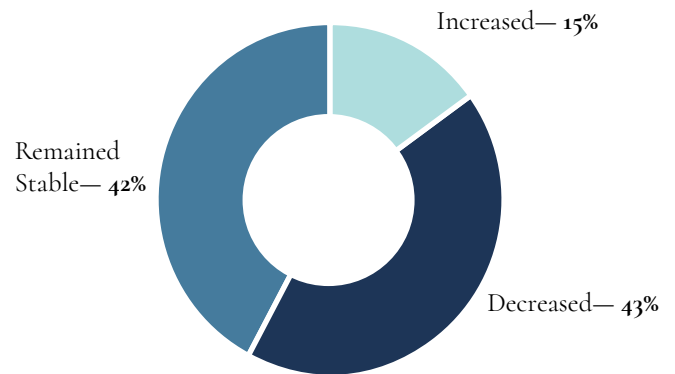


Figure 9a: For comparison: excerpt from EUA-CDE *Doctoral Education in Europe today: approaches and institutional structures* (2019) “Compared to ten years ago, in your institution has the average time to complete a doctoral programme, decreased, remained stable or increased?” (Reproduced with kind permission from EUA-CDE)

compared to institutions with more than 1000 PGR (32% responses). (See figure 9a for comparator responses from the 2019 EUA-CDE report).

Question 35 focuses on rules or guidelines related to aspects of supervision. The responses show supervision to be generally highly regulated in respondent institutions (n=74) and more regulated than comparable data reported in the EUA-CDE report. In particular, respondent UK and Irish institutions reported rules or guidelines on most

or all programmes governing the appointment of supervisors (95%), frequency of supervision (91%), conflict between PGR and supervisor (80%) and maximum number of PGR per supervisor (73%).

Whilst rules or guidelines were also commonly reported relating to supervisor training (voluntary and/or mandatory), 36% and 28% of respondents respectively reported rules and guidelines on supervisor training only on some doctoral

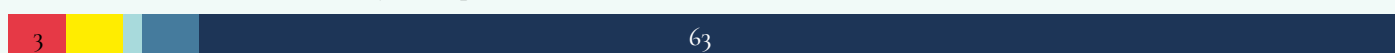
Appointment of supervisors



Formal reporting by the doctoral candidate of their activities



Formal feedback to the candidate by the supervisor



Written agreement between the candidate, supervisor and/or institution



Conflicts between candidates and supervisors



Minimum number of meetings between candidate and supervisor



Voluntary training for supervisors



Compulsory training for supervisors



Maximum number of candidates per supervisor

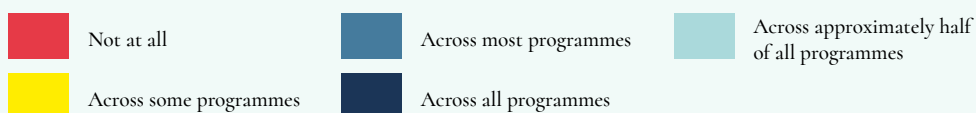


Figure 10: The extent of rules or guidelines regarding aspects of doctoral education. (n=73)

programmes or none at all. Only 45% of responding institutions reported rules or guidelines related to a written agreement between the PGR, supervisor and/or institution.

The predominant model for supervision reported by 77% of respondents across all or most programmes was two supervisors with one principal supervisor, although 23% of respondent institutions still reported single supervisors in some instances. Three institutions reported single supervisors across all or

most of their programmes. All respondents reported some supervisory teams with members from other institutions or organisations, although only 12% (nine institutions) reported external supervisors across

A supervisory team - including members from other institutions or organisations



A supervisory team - all internal to the institution



Two supervisors with one principal supervisor



A single supervisor

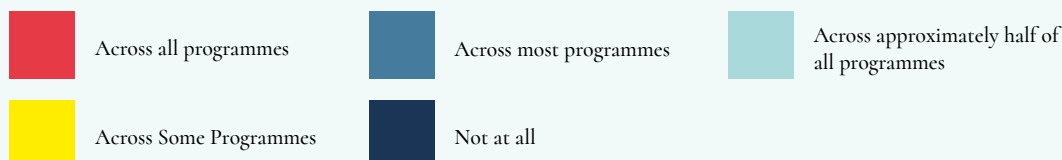


Figure 11: The extent of rules or guidelines regarding aspects of doctoral education

all or most programmes. Compared with the data presented in the EUA-CDE report, respondent institutions were less likely to report single supervisors and more likely to report supervisor teams with members from outside of the university.

In the final section of the survey, respondents were asked to consider the current state of doctoral education and what challenges there are likely to be in the future. The responses were elicited as free text and were coded and summarised (see below).

Q37. What, in your opinion, are the major challenges and opportunities currently facing doctoral education in the UK?

Funding was a clear challenge that preoccupied many of the respondents. Responses coded as improving equality, diversity and inclusion were phrased both as a challenge and an opportunity by institutions whose responses revealed a determination to address this issue. Covid-19 and Brexit were both referenced separately in their own right as major challenges as well as causal factors to other challenges, such as a tough international market for UK doctoral recruitment, PGR health and well-being, and a depressed job market for doctoral graduates. 8% of respondent institutions expressed ongoing concern related to inequitable doctoral experiences between funded and self-funded postgraduate researchers.

Major challenge or opportunity facing doctoral education in the UK	Number of responses coded in each category	Percentage of respondent institutions reporting each challenge/opportunity
Funding	44	67
Covid-19	18	27
Improving equality, diversity and inclusion	18	27
Enhanced support for health and wellbeing	12	18
Improved support for careers/employability (within and outside research)	11	17
International recruitment	10	15
Brexit	10	15
Further development of online/remote-learning doctorates	9	14
Changes in form and format of the doctorate	6	9
Consistency of doctoral experience	5	8

Table 16: Top ten major challenges or opportunities facing doctoral education in the UK. N=66. Total coded=168. UK universities only.

The potential for changes in form and format of the doctorate to better meet challenges of widening participation, mental health, and employability was reported as an opportunity by 9% of responding institutions.

Q38. What changes do you think will affect doctoral education in the UK over the next 5 years?

Many respondent institutions cited Brexit, Covid-19 recovery, and a related decrease in funding for doctoral education as potential major changes in the next five years. Respondents also foresaw further evolution in the way in which doctoral education (training supervision, conferences, events) was delivered and the types of research that doctoral candidates might undertake.

Changes in the next 5 years	Number of responses coded in each category	% of respondent institutions	Notes
Brexit	22	35	Recruitment challenges / negative reputational impact & relationship with the European Union
Decrease in funding	19	30	Poorer economic outlook inc. Covid-19 and/or Brexit
Covid-19 recovery	16	25	Decrease in funding, international mobility and/or recruitment
Increase in online/remote/blended-learning doctorates	9	14	
Increase in challenge-focused/interdisciplinary/industrial/applied doctoral research	4	6	
More inclusive and diverse doctoral community	4	6	
Further clarifications of funder expectations	3	5	New rounds of doctoral training funding & outcomes of UKRI reviews

Table 17: Changes affecting doctoral education in the next five years. n=63. Total responses coded =119. UK universities only.

Q39. What, if any, national developments in doctoral education would you like to see over the next 5-10 years?

Responses to this question coalesced around a desire for changes in funding that could support the development of a more inclusive doctoral community, an aspiration to increased collaboration with partners, and a wish for better practice

in widening participation. 17% of respondent institutions also sought review (and improvement) of a variety of elements within the current doctorate, including examination and form and format. Only 5% of respondent institutions cited enhanced supervisor training as something they would like to see over the next 5-10 years.

National developments in doctoral education that respondent would like to see over the next 5-10 years	Number of responses coded in each category	% of respondent institutions	Notes
Changes in funding	21	36	Including changes post-Brexit, need for greater investment (6), less fragmented (5), more equitable/simplified access to UKRI funding (5), better financial support for PGR (1), allowing PhD funding to be incorporated in research funding bids (1) changes in QR RDP to include professional/taught doctorates (1)
More/easier collaboration	13	22	Including references to cross-institutional, cross-sectoral, interdisciplinary and international collaboration
Better mechanisms for widening participation	11	19	Including references to more targeted funding
Review and enhanced reporting	10	17	Including review of cost of research degree provision (1), standardised approach to assessing doctoral programmes (1), more funded research on the doctorate (1), better data-sharing (1), review of doctoral examination (2) and review of/renewed guidance for form and format of the doctorate (4)
Enhanced training	6	10	Including enhanced supervisor training (3), enhanced PGR training (2) and career development (1)
Improvement in research culture	4	7	
PGR treated more like staff	4	7	

Table 18: National developments in doctoral education that respondent would like to see over the next 5-10 years. n=59. Total coded responses = 91. UK and Irish universities.

Q40. What have been the major impacts of Covid-19 on doctoral education in your institution?

89% of respondent institutions reported that extensions to registration had been a major impact of the Covid-19 pandemic. 58% reported increased numbers of suspensions. Only 27% cited an impact on recruitment.

Impacts of Covid-19	Total number of responses by category	% of respondent institutions
Extension to registration	63	89
Increase in suspension rates	41	58
Submission and completion rates	40	56
Demand on QR to support PGR on studentships	34	48
Ability to deliver researcher development opportunities and initiatives	32	45
Progression	25	35
Supervisory meetings	22	31
Recruitment	19	27
Access to facilities	2	3

Table 19: Major impacts of Covid-19 on doctoral education in respondents' institution. n=71

Q41. How do you think Covid-19 will affect the future of doctoral education in the UK?

More than half of respondents predicted that the pandemic would lead to increased and enhanced online delivery of doctoral education and growth in at-distance programmes in the future. A reduction in available funding as a result of economic challenges resultant from the pandemic was a

key concern. There did not appear to be a strong consensus around whether Covid-19 would make recruitment – particularly of international and part-time PGR – more difficult (as a result of restricted travel and economic downturn) or easier (because of enhanced online capability). 11% of respondents highlighted potential changes in how future doctoral projects would be designed and in what discipline areas they would be undertaken as a consequence of some of the constraints related to the pandemic that might change practice in the longer term. Interestingly one respondent felt that there would be greater emphasis on 'risk management of doctoral projects' as a result of the pandemic.

Covid-19 and the future of UK doctoral education	Total number of responses by category	% of respondent institutions
Enhanced online/at-distance/blended offer	32	52
Less funding available for new studentships	10	16
Decrease in PGR recruitment	10	16
Change in how research is conducted	7	11
Highlighted need for flexible support	5	8
Increase in recruitment	5	8

Table 20: Effects of Covid-19 on the future of doctoral education in the UK.

7. Discussion and Conclusions

The structures and strategies which support graduate education continue to evolve as the policy landscape shifts, markets change and institutions restructure, reprioritise, and choose to invest or divert investment elsewhere. Whilst institutional autonomy within the UK and Irish Higher Education sectors creates vibrancy and a diversity of approaches in meeting the needs of postgraduate students and researchers and engaging with policymakers in these national contexts, the survey responses and policy changes reveal several trends and commonalities which characterise the contemporary approach and future aspirations for graduate education in the UK and Ireland.

The almost total demise of support for taught postgraduate students through graduate schools or equivalent is noted here. Issues related to taught postgraduate education therefore do not appear again in this discussion section. There remains a need, however, for serious consideration by universities as to how leadership, coordination and support for taught postgraduate student communities and programmes is provided.

This section will review the major trends in policy and practice since 2015. It will begin by reprising the three distinct phases of the evolution of structures and strategy to support doctoral education that were identified in the 2015 report and will explore the continuation of phase three - 'collaboration and diversification'. This section goes on to suggest the potential emergence of a fourth phase in which policymakers, funders, and Deans and Directors of Graduate Schools or equivalent structures prioritise people and culture. It will go on to compare the key trends highlighted in 2015 with those in

2021, including those in structure and leadership, inconsistencies in the doctoral training offer, and quality of supervision. It will review the predictions of the previous report against the current reality for doctoral education in the UK and Ireland. This section will conclude with a discussion of possible future trends, alongside an acknowledgement that predictions for the future are particularly susceptible to unanticipated changes in direction in the current context.

Collaboration

The three distinct phases identified in the previous report are: the establishment of graduate schools or equivalent structures; the consolidation and regulation of quality; and collaboration and diversification of models. This report sees the continuation and development of policy and practice related to collaboration characterised as phase three in 2015 report. This has included the publication of a national framework and a skills statement in Ireland (IUA, 2015, 2015a) since 2015, which has facilitated standardisation and enabled more cross-institutional and international doctoral partnerships. In the UK, subtle changes in expectations outlined in doctoral training partnership funding calls have led to increasing numbers of pre/post-92 consortia on cohort-based programmes. The EPSRC and ESRC review outcomes have highlighted again the importance of collaboration with business, industry, and third sector organisations. The focus on 'routes in, through and out' of doctoral education in the New Deal for Postgraduate Research

could precipitate a further expansion in funded partnership programmes with the potential for further investment in existing funded cohort-based programmes to be balanced with investment in new collaborative programmes in universities that have not typically hosted research council doctoral training partnerships. 22% of the free text responses to the question of what national developments in doctoral education respondents would like to see in the next 5-10 years, highlighted a common desire for collaborations to become easier to establish and operationalise, whilst 89% of respondents reported that doctoral candidates at their institution were already supervised by a team whose membership included supervisors from another university in some, most or all programmes. Collaborations with industry, business and third sector will almost certainly be a notable characteristic of doctoral education in the next UKCGE structures and strategies report as they have the potential to address any future decline or stagnation in the level of available funding, which some respondents were concerned would result from an economic downturn in the wake of Brexit and Covid-19. Innovations in cross-sectoral partnership-working could leverage additional investment for doctoral education, increase the amount of challenge-focused, interdisciplinary and applied doctoral research undertaken, and might also in some ways address doctoral employability.

Diversification

Diversification in 2015 was characterised as ‘variation in modes of delivery that include mechanisms such as blended learning’ and ‘an increase in e-learning provision and use of virtual learning environments as an efficient way to make development opportunities more widely available’. The 2015 analysis speculated that the resultant blurring of boundaries between full-time and part-time that was enabled by more flexible modes of delivery had already begun a trend

towards full-time registrations in the UK. The most recent data shows that this trend has continued in the UK, although Ireland has shown an increase in part-time registrations over the same period. Survey responses from both UK and Irish institutions have highlighted how much the global pandemic has already increased and enhanced online delivery of doctoral education and riven growth in at-distance programmes and will likely continue to do so. The latter was already visible in HESA data used in the 2015 report although, at that time, at-distance programmes were not explicitly referenced in survey data. This is significantly different in the 2021 responses where a shift to online or blended delivery is noted as a major impact of the pandemic that has already taken place and is predicted by respondents to shape the development of future programmes. Diversification of doctoral models has been recently articulated as one of the four areas of focus for the New Deal for Postgraduate Research in the UK in the context of widening access and facilitating collaboration. Just as in 2015, diversified modes of delivery are highlighted by some respondents as also having the potential to enable growth in student numbers. Questions raised in the 2015 report regarding parity of experience between on-campus and at-distance modes of study remain pertinent, however.

People-centred approach

Perhaps the clearest new trend in the UK survey data and policy environment since 2015 has been the emergent focus on people, alongside the existing discourse related to structures, standards and models for doctoral education that had largely dominated policy and practice up to 2018. This shift in focus took place in the context of a wider concern for research culture amongst research funders, learned societies, and latterly the UK government’s research and development People and Culture Strategy. It also linked to concerns relating to student

wellbeing and protection that arose from the Office for Students. Postgraduate researchers were the point where concerns over research culture and student wellbeing met in the middle. The change in focus was characterised by HEFCE-commissioned reports, a UKCGE national working group, and several large-scale events. Funding for projects has raised the profile of postgraduate researcher mental health and wellbeing further and survey results indicate high levels of engagement across many respondent institutions such that this area has been the second most common external driver of institutional changes in doctoral education since the last survey. Enhanced support for PGR mental health and wellbeing was fourth in the top ten major challenges and opportunities currently facing the sector according to respondents. Several institutions also highlighted the potential for future changes in form and format of the doctorate to better meet the challenges of PGR mental health and wellbeing. The recent UKCGE supervisor survey (Gower, 2021) has also highlighted mental health and wellbeing issues amongst supervisors and several gaps in support and training offered to supervisors by institutions to help them meet the mental health and wellbeing needs of their doctoral candidates.

Key characteristics revisited

As we emerge into a fourth, people-centred phase for doctoral education, we can also see a rationalisation in structures that are reported in the survey and observed in the desk-based research that followed. Key characteristics of graduate education set out in the 2015 report were: a complex landscape of institution-wide graduate schools; graduate schools at faculty level; doctoral training centres both within and across universities; and the nascent doctoral college model. Although there is still little consensus over nomenclature and continued growth in funded cohort-based doctoral training has ensured that the multi-layering of structures persists, the majority

of institutions have settled on a single, institution-wide structure to support doctoral education. 37% of respondent institutions reported creating a new structure to do this. Survey responses also highlight professional services leadership in the form of a 'Director' as the predominant model. Some institutions reported an increase in posts to bring additional expertise into the institutional graduate school or equivalent structure. Only three respondent institutions reported no change in structures supporting doctoral provision in the past five years.

Several of the other future trends predicted in the 2015 report have remained on the collective agenda and continue to be present in policy and practice. The question of inequality and inconsistencies in the doctoral training offer (within and between institutions) dependent upon funding and quality of supervision is still a live issue. The equality, diversity and inclusion agenda has sharpened the focus on equitable access to research council funding, which remains a concern amongst a number of post-92 respondent institutions who also have the most diverse doctoral communities. Access to funding for studentships was reported as a top three issue in the free text responses from all institutions to questions on the impacts of Covid-19, major challenges facing doctoral education currently, and major changes in the next five years. Changes to funding was the top response to the question about what national development in doctoral education respondents would like to see in the next five to ten years, which included detail on a desire for work to make doctoral funding less fragmented with more equitable and simplified access to research council funding. Changes in Quality-related Research Degree Programme fund allocation to include professional and taught doctorates and better financial support for postgraduate researchers were also highlighted as desirable inclusive practice by a small number of respondents. Concerns regarding parity of supervision quality in 2015 appear to have driven the emergence of mandatory supervisor training, which is reported across all or most programmes by

68% of respondent institutions. Graduate schools or equivalent structures also report high levels of involvement in supervisor training and development activity (with a small number of institutions reporting this as an expansion in their graduate school remit). However, whilst gaps remain in the training and support offer, as noted in the section above, only three respondent universities considered enhanced supervisor training to be one of their desired national developments for the mid to longer term.

The increase in personalisation of programmes to meet individual training needs that was predicted in 2015 speaks to the person-centred focus for doctoral education that has emerged since the last report. However, there is little indication that enhanced personalisation has been sought or achieved by graduate schools or equivalent structures in the intervening period. This may be an area where online delivery, developed quickly in the response to the pandemic, can drive greater breadth and depth of available training to better suit individual needs; particularly if – as one respondent points out – ‘institutions can work smarter together in coordinating more cross-institutional delivery of training and development for postgraduate researchers outside of funded consortia’. This could go some way in the next few years to addressing expectations set in 2015 that learning from cohort-based doctoral programmes could act to drive up training standards across the sector. The 2015 report also highlighted the challenges that graduate schools or equivalent would face to streamline and accommodate the ‘messiness’ of working across universities, disciplines and sectors. Whilst increased numbers of collaborative programmes to date appear to indicate some success in ways of working since 2015, more than one in five respondent institutions to the 2021 survey wanted collaborations to become more straightforward to establish in the future.

Future trends

It is clear that the consequences of Britain’s departure from the European Union and Covid-19 are ongoing and significant and that they will influence the contemporary UK, Irish and global political and economic context for years to come. This, alongside seismic shifts in focus brought about by conflict, national and international responses to the climate crisis, make predicting future trends perhaps more challenging than usual. However, using the predictions of the survey respondents on the challenges and opportunities for the next five to ten years, the direction in UK and Irish policy related to research and doctoral education, and the wider international picture, this section goes on to explore three possible future trends and their implications:

- (i) Growth in the doctoral population;
- (ii) Continued development of the social justice agenda;
- (iii) Expansion of graduate school or equivalent remits to take the institutional lead in research staff training and enhancements in research culture.

Growth in the doctoral population

Survey responses suggested a clear aspiration to accelerate growth in the PGR population. For UK institutions this will mean a significant uplift from the 2.5% increase between 2013/14 and 2020/21. For Irish institutions this will mean building on the 16.7% increase in the number of PhD enrolments already seen between 2014/15 and 2020/21. The projections for growth that are set out in the survey responses demonstrate a desire for significant increases in doctoral population size. Where the percentage increase was specified, the mean average increase was 53% over five years (median 27.5%). Issues with access to doctoral funding for institutions and individuals could be a major constraint. However, the UK government has maintained its commitment to 2.4% of GDP investment in research – albeit delayed by two years

– and it is estimated that to achieve this ambition of increasing expenditure on research and development a further 25,000 funded PhD candidates would need to be recruited over seven years (HEPI, 2020). If mechanisms for allocation of doctoral funding are reviewed to better reflect the sector's aspirations to diversity, inclusion and collaboration then this new investment could go some small way to promoting sector-wide growth in doctoral education and reversing the trend towards a greater concentration of doctoral candidates in a smaller number of institutions.

It is possible that the sector will also see increased demand from applicants for doctoral education due to growth caused by birth rates and progression of these cohorts through the education system in future years. Moreover, if the peri/post-pandemic period leads to recession, universities may see an increase in the number of home and international candidates wishing to pursue a doctorate, similar to that seen after the 2008 recession. There is likely to be tough competition in the international market, which was a concern for many survey respondents due to uncertainties related to challenges in international travel, at least temporarily constraining international recruitment. In addition, significant increases in the number of awards and enrolments in China and India and in other countries with developing research infrastructure are predicted over the next few years, along with continued competition for international recruitment from universities in Europe, the United States, Australia, New Zealand, Japan and South Korea, who have all demonstrated growth in awards made to international candidates since the last report (see Section 3).

It is likely, therefore, that much of the PGR population growth in UK and Ireland will need to be driven through programme innovation and partnership development that makes the doctorate more attractive to a wider range of applicants or opens up new, perhaps international, markets through dual award or cotutelle arrangements. Survey responses from UK and Irish institutions

highlight, however, that graduate schools or equivalent have little involvement in the development of new international programmes. This could be an area where graduate schools develop future expertise that is specific to doctoral-level collaborations. Innovation in digital technology, shifts to online training, administration processes and examination that have begun as a result of the pandemic may also provide the nascent infrastructure to support significant growth in international partnership-working in the next few years.

Rise of social justice agenda

Related to the turn towards a more people-centred approach to doctoral education in recent years, the focus on experiences of doctoral candidates from under-represented groups at doctoral level, and the pipeline into research degrees for candidates from under-represented communities will continue to grow over the next period. Although the 2021 survey results were mixed in terms of strategic support for the equality, diversity and inclusion agenda, diversity of the doctoral population was in the top five common measures of success for graduate schools or equivalent structures which should shape activity and investment over the coming years. Responses to the survey questions on diversity trends and on key challenges and opportunities facing doctoral education reveal that there is a lack of data (institutional and sectoral) to inform activity related to creating inclusive communities and that this remains a barrier. Nevertheless, a significant minority of respondent institutions reported using targeted policies and projects designed at an institutional level to address and promote diverse and inclusive postgraduate research communities. We might expect this activity to increase as the full UKRI equality, diversity and inclusion strategy is implemented over the coming years, and data collection and benchmarking improves.

Whilst both policy around social justice at doctoral level and the survey responses mainly focuses on

recruitment and admissions, it is worth highlighting that only 40% of survey respondents suggested that their graduate school or equivalent structure had a high level of involvement in these areas. This could be an activity where graduate school leadership and coordination could expedite future change. Moreover, an area less well-explored in policy and practice is fairness and equity in research agenda-setting at doctoral level, which may be a future area for collaboration between graduate schools or equivalent structures and university community engagement partnerships. This could lead to new mechanisms for civic society to influence and be involved with doctoral research and education.

The role of the supervisor community in supporting and enabling a more open and inclusive doctoral community will be critical over the coming years. However, as has already been noted, supervisors do not universally feel well-supported to acquire the interpersonal and intercultural skills needed to supervise doctoral candidates from diverse backgrounds, nor trained to deal with mental health and wellbeing issues encountered by their supervisees. Issues relating to promotion, value and reward and workload were also raised by supervisor respondents to the *UK Research Supervision Survey 2021* (Gower, 2021).

Expansion of graduate school remit to include research staff

The survey results showed high levels of contribution to supervisor training and development by graduate schools or equivalent across the majority of respondent universities, with an increase from 75% in 2015 to 84% in 2021. In addition, there has been a clear expansion in the remit of graduate schools or equivalent structures since the 2015 report to include support for early career researchers specifically (41%), and research staff in general (27%). In a small number of institutions this expansion is contextualised within their university's approach to implementing the *Researcher Concordat* or using a graduate school or equivalent structure to drive

activity related to enhancing the research culture. It is clear that the increased involvement of graduate schools in supporting early career researchers and the wider research community has potential to deliver a more joined-up approach to enhancing research culture. This trend could ensure a wider and deeper programme of training and development that can better accommodate entry and re-entry into research careers, and cross-disciplinary and inter-sectoral shifts over a lifetime, thereby supporting collaboration and researcher mobility. It can also enable the sector to tackle some of the 'wicked problems' the sector faces in terms of research culture by engaging multiple generations of researchers together, bringing many perspectives to bear on major challenges such as bullying and workplace stress (Wellcome Trust and Shift Learning, 2020).

Specifically with regard to supervisor training, the expansion in remit has the potential to expedite a shift – already underway in some institutions – from short-course workshops, focussed on institutional regulations (Taylor, 2018: 7) towards more in-depth and comprehensive supervisor training situated within a wider continuing professional development offer to supervisees as much as supervisors. In future, this could better support the research community to re-examine supervision in the light of the social justice agenda, and provide a mechanism to interrupt inequality caused by reproducing the dominant status of existing privileged groups through supervision (Boud and Tennant, 2006) thereby enabling the drive towards inclusive doctoral communities.

Reconsiderations

This survey has provided a snapshot of graduate education with a focus on the doctoral landscape in challenging and unprecedented times. Collaboration and diversification of programmes remains high on

the agenda, but people and culture have emerged as a new narrative to challenge the collective focus on quality and structure that has characterised survey responses over the series of reports since 1995. With considerations of mental health and well-being amongst doctoral candidates and their supervisors alike, and the emergence of the social justice agenda, questions arise which will cause us to revisit with some urgency ongoing issues related to equitable access to doctoral funding for institutions and individuals, the purpose of the doctorate, and its current forms and formats. These questions have already begun to surface amongst some of the free text responses to the 2021 survey and are central to the recently launched *new deal for postgraduate research call for input*.

Urgent work in these areas is now more important than ever, to ensure doctoral education can play a significant role in delivering both the kind of research that can drive post-pandemic recovery and the trained, highly skilled doctoral graduates who are happy and confident to lead it.

References

- Augar, P. (2019). *Review of Post-18 Education and Funding*. [Online]. London: Department for Education, UK Government. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/805127/Review_of_post_18_education_and_funding.pdf [Accessed 14th January 2022].
- Austin, A. and Miller, E. (2020). Strengths, Challenges and Opportunities in US Doctoral Education. In Yudkevich, M., Altbach, P.G. and de Wit, H. eds. *Trends and issues in doctoral education: A global perspective*. 1st edn. London: SAGE, pp. 181-212.
- Australian Council of Graduate Research (ACGR) (2022). *Good Practice Guidelines*. Available at: <https://www.acgr.edu.au/good-practice/best-practice/> Canberra: ACGR. [Accessed 14th January 2022].
- Australian Industry Group and Australian Council of Graduate Research (2018). *Principles to Guide Industry-University Collaboration in Graduate Research Training*. [Online]. Canberra: Australian Council of Graduate Research. Available at: <https://www.acgr.edu.au/good-practice/best-practice/>. [Accessed 20th March 2022].
- Bennett, M. (2020). Doctoral loans have not radically changed PhD recruitment. 11 March 2020. *WONKHE* [Online]. Available at: <https://wonkhe.com/blogs/doctoral-loans-have-not-radically-changed-phd-recruitment/> [Accessed 14th January 2022].
- Bennett, M. (2020). Understanding the Journey to Doctoral Education: Results from the 2019 FUTURE PhD STUDENT SURVEY. *FindaUniversity* [Online]. Available at: <https://www.findauniversity.com/comment/5829/understanding-the-journey-to-doctoral-education-results-from-the-2019-future-phd-student-survey> [Accessed 14th January 2022].
- Blackmore, C., Ohlsen, S., Guccione, K. and Daley, R. (2020). *Are you ok? Mental health and wellbeing of international doctoral students in the UK: an investigation of supervisors' understanding and existing support provision*. [Online]. London: UK Council for International Student Affairs (UKCISA). Available at: <https://www.ukcisa.org.uk/Research--Policy/Resource-bank/resources/189/Are-you-ok-Mental-health-and-wellbeing-of-international-doctoral-students-in-the-UK> [Accessed 14th January 2022].
- Bogle, D. (2018). *Independent Review of the Concordat to Support the Career Development of Researchers*. Swindon: UK Research and Innovation.
- Boud, D. and Tennant, M. (2006). Putting doctoral education to work: challenges to academic practice. *Higher Education Research and Development*, 78(3), pp. 293-306.

British Council (2018). *International student mobility to 2027: Local investment, global outcomes*. (Online). Manchester: British Council. Available at: <https://www.britishcouncil.org/contact/press/international-student-mobility-grow-more-slowly-2027> [Accessed 10th January 2022].

British Council and German Academic Exchange Service (Deutscher Akademischer Austauschdienst, DAAD). (2018). *Building PhD Capacity in Sub-Saharan Africa*. [Online] London and Berlin: British Council and DAAD. Available at: https://www.britishcouncil.org/sites/default/files/h233_07_synthesis_report_final_web.pdf [Accessed 10th January 2022].

Bundesbericht Wissenschaftlicher Nachwuchs (BuWin) (2021). *Federal Report on Young Researchers: Statistical data and research findings on doctoral students and postdocs in Germany*. [Online]. Berlin: BuWin. Available at: https://www.wbv.de/shop/themenbereiche/hochschule-und-wissenschaft/shop/detail/name/_/o/1/6004603a/facet/6004603a////////nb/o/category/1740.html [Accessed 11th January 2022].

Byrne, J.M., Jørgensen, T. and Loukkola, T. (2013). *Quality Assurance in Doctoral Education – Results of the ARDE project*. [Online]. Brussels: European Universities Association (EUA). Available at: <https://eua.eu/downloads/publications/quality%20assurance%20in%20doctoral%20education%20%20results%20of%20the%20arde%20project.pdf> [Accessed 10th January 2022].

Byrne, M. (2020). Brexit is a Big Risk – and an Opportunity to become a Global Centre for Learning. *The Irish Times*. [Online]. 8 December. Available at: <https://www.irishtimes.com/news/education/brexit-is-a-big-risk-and-an-opportunity-to-become-a-global-centre-for-learning-1.4423377>. [Accessed 14th January 2020].

Cardoso, S., Tavares, O., Sin, C. and Carvalho, T. (2020). *Structural and Institutional Transformations in Doctoral Education: Social, Political and Student Expectations*. [Online]. Switzerland: Palgrave Macmillan. Available at: https://books.google.co.uk/books?hl=en&lr=&id=oATaDwAAQBAJ&oi=fnd&pg=PP1&dq=cardoso+structural+and+institutional+transformations&ots=OWCjEeh79l&sig=O1SGWW5fulPxaz8l57Wf1jgmgQ&redir_esc=y#v=onepage&q=cardoso%20structural%20and%20institutional%20transformationsnerad&f=false [Accessed 14th January 2022].

Global Economic Data, Indicators, Charts and Forecasts (CEIC). (2022). *China Number of Graduate: Postgraduate: Doctor Degree*. [Online]. Available at: <https://www.ceicdata.com/en/china/number-of-graduate-postgraduate/no-of-graduate-postgraduate-doctor-degree> [Accessed 10th January 2022].

Cerejo, C., Awati, M. and Hayward, A. (2020). *Joy and Stress Triggers: A Global Survey on Mental Health among Researchers*. [Online]. London: Cactus Foundation. Available at: <https://www.cactusglobal.com/mental-health-survey/cactus-mental-health-survey-report-2020.pdf> [Accessed 14th January 2022].

Chen, S. (2020). Mainland China: Rapid Growth and New Strategies in Doctoral Education. In: Yudkevich, M., Altbach, P.G. and de Wit, H. eds. *Trends and issues in doctoral education: A global perspective*. 1st edn. London: SAGE, pp. 267-294.

Chiappa, R. and Perez Mejias, P. (2019). Unfolding the direct and indirect effects of social class of origin on faculty income. *Higher Education*, 78(3), pp.529-555.

The State Council, The People's Republic of China. (2020). *China to Expand Enrollment for Professional Postgraduates*. [Online]. 1st October. Available at: http://english.www.gov.cn/statecouncil/ministries/202010/01/content_WS5f750d5cc6dof7257693cf61.html [Accessed 11th January 2022].

Cloete, N., Mouton, J. and Sheppard, C. (2015). *Doctoral Education in South Africa*. Cape Town: African Minds.

de Almeida, A.M.F., Ernica, M. and Knobel, M. (2020). Building Research Capacity and Training: Brazilian Dilemmas in Doctoral Education. In: Yudkevich, M., Altbach, P.G. and de Wit, H. eds. *Trends and issues in doctoral education: A global perspective*. 1st edn. London: SAGE, pp. 389-413.

Deem, R. and Dowle, S. (2020). The UK doctorate: History, features and Challenges. In: Yudkevich, M., Altbach, P.G. and de Wit, H. eds. *Trends and issues in doctoral education: A global perspective*. 1st edn. London: SAGE, pp. 152-178.

Denicolo, P., Fuller, M. and Berry, D. (2010). *A Review of Graduate Schools in the UK*. [Online]. Lichfield: UK Council for Graduate (UKCGE). Available at: <https://ukcge.ac.uk/assets/resources/20-A-Review-of-Graduate-Schools-2010.pdf> [Accessed 21st March 2022].

Department of Education, Skills and Employment (DESE). (2017). *Research Training Implementation Plan*. [Online]. Canberra: Australian Government. Available at <https://www.dese.gov.au/higher-education-statistics/resources/research-training-implementation-plan> [Accessed 15th March 2022].

Department for Business, Energy & Industrial Strategy (BEIS). (2017a). *Industrial Strategy: Building a Britain fit for the future*. [Online]. London: HM Government. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf [Accessed 15th March 2022].

Department for Business, Energy & Industrial Strategy (BEIS). (2017b). *UK Innovation Strategy: Leading the future by creating it*. [Online]. London: HM Government. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009577/uk-innovation-strategy.pdf [accessed 15th March 2022]

Department for Business, Energy & Industrial Strategy (BEIS). (2020). *UK Research and Development Roadmap*. [Online]. London: HM Government. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896799/UK_Research_and_Development_Roadmap.pdf [Accessed 14th January 2022].

Department for Business, Energy & Industrial Strategy (BEIS). (2021). *R&D People and Culture Strategy: People at the heart of R&D*. [Online]. London: UK Government. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004685/r_d-people-culture-strategy.pdf [Accessed 14th January 2022].

Department of Business, Enterprise and Innovation. (2019). *Mid-term Review of Innovation*. [Online]. Dublin: Government of Ireland. Available at: <https://enterprise.gov.ie/en/Publications/Publication-files/Mid-term-Review-of-Innovation-2020.pdf> [Accessed 11th January 2022].

Department for Education (2017). *Postgraduate Doctoral Loans Policy: Equity Analysis*. [Online]. London: UK Government. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/597325/Postgraduate_doctoral_loans_policy_-_Equality_Analysis.pdf [Accessed 14th January 2022].

Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2021). *Review of Ireland's higher education system – Higher Education Research Group*. [Online]. Dublin: Government of Ireland. Available at: <https://www.gov.ie/en/publication/36a37-review-of-irelands-higher-education-research-system-higher-education-research-group/> [Accessed 12th January 2022].

Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). (2015). *Innovation 2020, Irish Government Interdepartmental Committee Report on Science, Technology and Innovation*. [Online]. Dublin: DFHERIS. Available at <https://enterprise.gov.ie/en/Publications/Publication-files/Innovation-2020.pdf>. [Accessed 20th March 2022].

Department of Higher Education and Training, Republic of South Africa (2020). *Annual Report 2019/20: From the past. To the future*. [Online]. Pretoria: National Government of South Africa. Available at: [https://nationalgovernment.co.za/department_annual/320/2020-department-of-higher-education-and-training-\(dhet\)-annual-report.pdf](https://nationalgovernment.co.za/department_annual/320/2020-department-of-higher-education-and-training-(dhet)-annual-report.pdf) [Accessed 11th January 2022].

Dimé, M. (2018). *Research and PhD Capacities in Sub-Saharan Africa: Senegal Report*. [Online]. London and Berlin: British Council and German Academic Exchange Service (Deutscher Akademischer Austauschdienst, DAAD) Available at: https://www2.daad.de/medien/der-daad/analysen-studien/research_and_phd_capacities_in_sub-saharan_africa_-_senegal_report.pdf [Accessed 10th January 2022].

Engineering and Physical Sciences Research Council (EPSRC). (2021). *Review of EPSRC-funded Doctoral Education*. [Online] Swindon: EPSRC. Available at: <https://www.ukri.org/publications/review-of-epsrc-funded-doctoral-education/> [Accessed 14th January 2022].

European Commission (EC). (2014). *Researchers' Report 2014*. [Online]. Brussels: EC. Available at: <https://euraxess.ec.europa.eu/content/researcher-report-2014> [Accessed 10th January 2022].

European Commission (EC). (2022). *Erasmus Mundus Joint Masters*. [Online]. Brussels: EC. Available at: <https://erasmus-plus.ec.europa.eu/opportunities/organisations/cooperation-among-organisations-and-institutions/erasmus-mundus-joint-masters> [Accessed 14th January 2022].

European Universities Association Solutions (EUAS). (2021). *The National Framework for Doctoral Education in Ireland: Report on its Implementation by Irish Higher Education Institutions*. [Online]. Brussels: European Universities Association (EUA). Available at: https://www.iaa.ie/wp-content/uploads/2021/07/EUA-Solutions-report_HEA_QQI_IUA_THEA.pdf [Accessed 7th March 2022].

Forces and Forms of Doctoral Education. (2019). *Hannover Recommendations 2019*. [Online]. Bremen International Graduate School of Social Sciences: Bremen. Available at: <https://www.doctoral-education.info/dl/Hannover-Recommendations-DocEd-2019.pdf> [Accessed 15th March 2022].

Forrester, N. (2021). *Mental Health of Graduate Students Sorely Overlooked*. [Online]. Nature. Available at: <https://www.nature.com/articles/d41586-021-01751-z#ref-CR1> [Accessed 14th January 2022].

Government of Ireland. (2020). *Innovation 2020*. [Online]. Dublin: Government of Ireland. Available at: <https://enterprise.gov.ie/en/Publications/Publication-files/Innovation-2020.pdf> [Accessed 14th January 2022].

Gower, O. (2021). *UK Research Supervision Survey. 2021 Report*. [Online]. Lichfield. UK Council for Graduate Education (UKCGE). Available at: <http://www.ukcge.ac.uk/uk-research-supervision-survey.aspx> [Accessed 14th January 2022].

Group of Eight and Australia India Institute. (2020). *The National Education Policy: Possibilities for India-Australia Collaboration Webinar* [Webinar]. Available at: <https://go8.edu.au/go8-aii-webinar-indias-national-education-policy> [Accessed 10th January 2022].

Hancock, S. (2020). *The Employment of PhD graduates in the UK: What do we know? Higher Education Policy Institute Blog*. [Online]. Available at: <https://www.hepi.ac.uk/2020/02/17/the-employment-of-phd-graduates-in-the-uk-what-do-we-know/> [Accessed 14th January 2022].

Harle, J. (2013). *Doctoral Education in Africa: A Review of Doctoral Student Needs and Existing Initiatives to Support Doctoral Training and Research Development – A Needs Analysis Undertaken as part of the DocLinks Project*. London: The Association of Commonwealth Universities (ACU)

Hasgall, A., Saenen, B. and Borrell-Damian, L. (2019). *Doctoral Education in Europe Today: Approaches and Institutional Structures*. [Online]. Brussels: European Universities Association (EUA). Available at: <https://eua.eu/downloads/publications/online%20eua%20ocde%20survey%2016.01.2019.pdf> [Accessed 14th January 2022].

Hawkes, D. and Yerrabati, S. (2018). *A Systematic Review of Research on Professional Doctorates*. London Review of Education, 16 (1), 10-27.

Higher Education Authority Ireland (HEA). (2022). *Enrolments Detailed 6 Year Trend Dashboard*. [Online]. Available at: <https://hea.ie/statistics/data-for-download-and-visualisations/enrolments/enrolments-detailed-6yeartrend-dashboard/> [Accessed 14th January 2022].

Higher Education Statistics Authority (HESA). (2021). *Who's studying in HE?* [Online]. Available at: <https://www.hesa.ac.uk/news/27-01-2021/sb258-higher-education-student-statistics> [Accessed 12th February 2022].

Higher Education Statistics Authority (HESA) (2022). *Who's studying in HE?* [Online]. Available at: <https://www.hesa.ac.uk/data-and-analysis/students/whos-in-he> [Accessed 12th February 2022].

House, G. (2020). *Postgraduate Education in the UK: HEPI Analytical Report 1*. [Online]. Oxford: Higher Education Policy Institute. Available at: <https://www.hepi.ac.uk/wp-content/uploads/2020/05/Postgraduate-Education-in-the-UK.pdf> [Accessed 11th January 2022].

Irish Research Council (IRC). (2021). *Minister Simon Harris announced €28m in Irish Research Council funding to support the next generation of top researchers*. [Online]. Available at: <https://research.ie/2021/10/06/minister-simon-harris-announces-e28m-in-irish-research-council-funding-to-support-the-next-generation-of-top-researchers/> [Accessed 14th January 2022].

Irish Research Council (IRC). (2021a). *IRC and COVID-19*. [Online]. Available at: <https://research.ie/irc-and-covid19/> [Accessed 14th January 2022].

Irish Universities Association (IUA). (2015). *National Framework for Doctoral Education 2015*. [Online]. Dublin: IUA. Available at: <https://www.iua.ie/publications/national-framework-for-doctoral-education-2015/> [Accessed 14th January 2022].

Irish Universities Association (IUA) (2015a). *IUA Graduate Skills Statement Brochure 2015*. [Online]. Dublin: IUA. Available at: <https://www.iua.ie/publications/iua-graduate-skills-statement-brochure-2015/> [Accessed 14th January 2022].

IUA. (2018). *National Guidelines for Establishing Collaborative Research Degree Programmes*. [Online]. Dublin: IUA. Available at: <https://www.nuigalway.ie/media/graduatestudies/files/externalpolicydocuments/IUA-Online-Brochure-for-Establishing-Collaborative-Research-Degree-Programmes-V4.pdf> [Accessed 14th January 2022].

IUA. (2019). *IUA Submission to Seanad Special Select Committee on the Withdrawal of the UK from the EU*. [Online]. Dublin: IUA. Available at: <https://www.iua.ie/wp-content/uploads/2019/10/IUA-Submission-to-Seanad-Brexit-committee-9-October-2019.pdf> [Accessed 14th January 2022].

IUA. (2021). *Researcher Career Development and Employment Framework*. [Online]. Dublin: IUA. Available at <https://www.iua.ie/wp-content/uploads/2021/09/IUA-THEA-Researcher-Career-Development-and-Employment-Framework-Update-August-2021.pdf> [Accessed 15th March 2022].

IUA. (2021a). *Irish Universities Doctoral Skills Statement Third Edition*. [Online]. Dublin: IUA. Available at: <https://www.iua.ie/wp-content/uploads/2021/07/IUA-PhD-Graduate-Skills-Statement-2021-final.pdf> [Accessed 14th January 2022].

IUA and European Universities Association (EUA). (2018). *Ireland's National Guidelines for Collaborative Research Degree Programmes*. [Online]. Brussels: EUA. Available at: <https://eua.eu/component/attachments/attachments.html?task=attachment&id=2270> [Accessed 14th January 2022].

JED Foundation and Council for Graduate Schools (CGS) (2021). *Supporting Graduate Student Mental Health and Well-being*. [Online] Washington: CGS. Available at: <https://jedfoundation.org/wp-content/uploads/2021/04/CGS-JED-Grad-Student-Mental-Health-Report.pdf> [Accessed 14th January 2022].

Jowi, J. O. (2021). Doctoral Training in African universities: Recent Trends, Developments and issues. *Journal of the British Academy*, 9(1), pp.159–181.

Kehm, B. (2020). The Past, Present and Future of Doctoral Education in Germany. In: Yudkevich, M., Altbach, P.G. and de Wit, H. eds. *Trends and issues in doctoral education: A global perspective*. 1st edn. London: SAGE, pp. 79-102.

Lee, A. and Bongaardt, R. eds., (2021). *The Future of Doctoral Research: Challenges and Opportunities*. London: Routledge.

League of European Research Universities (LERU). (2016). *Maintaining a Quality Culture in Doctoral Education in Research Intensive Universities*. [Online] Leuven: LERU. Available at: <https://www.leru.org/files/Maintaining-a-Quality-Culture-in-Doctoral-Education-Full-paper.pdf> [Accessed 10th January 2022].

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J. and Gisle, L. (2017). Work Organization and Mental Health Problems in PhD Students. *Research Policy*, 46(4), pp.868-879.

List of Universities in the United Kingdom by Date of Foundation (2022) *Wikipedia* [Online]. Available at: https://en.wikipedia.org/wiki/List_of_universities_in_the_United_Kingdom_by_date_of_foundation [Accessed 14th January 2022].

McGagh, J., Marsh, H., Western, M., Thomas, P., Hastings, A., Mihailova, M. and Wenham, M. (2016). *Review of Australia's Research Training System*. [Online]. Melbourne: Australian Council of Learned Academics. Available at: <http://acola.org.au/wp/PDF/SAF13/SAF13%20RTS%20report.pdf> [Accessed 14th January 2022].

McKenna, S. (2017). Crossing Conceptual Thresholds in Doctoral Communities. *Innovations in Education and Teaching International*, 5, 458-466.

Mellors-Bourne, R., Robinson, C. and Metcalfe J. (2016). *Provision of Professional Doctorates in English HE Institutions: report for HEFCE by the Careers Research and Advisory Centre (CRAC)*. [Online]. Cambridge: Careers Research and Advisory Centre. Available at: <https://dera.ioe.ac.uk//25165/> [Accessed 14th January 2022].

Metcalfe, J., Day, E., de Pury, J. and Dicks, A. (2020). *Catalyst Fund Supporting the mental health and wellbeing of postgraduate research students. Programme Evaluation*. [Online]. Cambridge: Vitae and Universities UK. Available at: <https://www.vitae.ac.uk/vitae-publications/catalyst-fund-supporting-mental-health-and-wellbeing-of-postgraduate-research-students> [Accessed 15th March 2022].

Ministry of Education, Department of Higher Education (2020). *All India Survey on Higher Education 2019-20*. [Online]. Delhi: Government of India. Available at: https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/aishe_eng.pdf [Accessed 11th January 2022].

Mohamedbhai, G. (2020). Quality Assurance of Doctoral Education is Now Urgent. [Online]. *University World News Africa Edition*, 11 June. Available at: <https://www.universityworldnews.com/post.php?story=20200609091837168> [Accessed 10th January 2022].

Munro, E. and Heath, S. (2021). *Falling Short: Response to UKRI's Phase 1 and Phase 2 Support for PhD Researchers During the COVID-19 Pandemic*. [Online]. Pandemic PGRs. Available at: https://drive.google.com/file/d/1-6sBsboTyQ82oaxeJIFd8S4a2AOgSS5K/view?fbclid=IwAR1cV_1Soo8KuaFx-Pl3NAeR5CILWABZgfvOoddgc29m-KTvPa33ii6W2vk [Accessed 14th January 2022].

Murray, M. (2021). *Ireland Lagging in Global Research Race Due to Little Public Spending on R&D*. [Online]. Irish Times, 29 September. Available at: <https://www.irishtimes.com/special-reports/business-ireland-magazine/ireland-lagging-in-global-research-race-due-to-little-public-spending-on-r-d-1.4660984> [Accessed 14th January 2022].

National Science Foundation, National Center for Science and Engineering Statistics (2019). *Survey of Earned Doctorates*. [Online]. Available at: <https://nces.nsf.gov/pubs/nsf21308/data-tables> [Accessed 10th January 2022].

Nature (2021). India Must Protect the Independence of its Landmark Science Agency. *Nature*. [Online]. (Editorial) 9 February. Available at: <https://www.nature.com/articles/d41586-021-00327-1> [Accessed 10th January 2022].

Organisation for Economic Co-operation and Development (OECD). (2018). *Education at a Glance 2018: OECD Indicators*. OECD Publishing: Paris.

OECD. *Statistics*. [Online]. Available at: <https://stats.oecd.org/Index.aspx> [Accessed 10th January 2022].

Pearce, S. (2021). *Independent Review of the Teaching Excellence and Student Outcomes Framework (TEF). Report to the Secretary of State*. [Online]. London: Department for Education, HM Government. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/952754/TEF_Independent_review_report.pdf [Accessed 15th March 2022].

Pitkin, M. (2021). *Findings from the 2021 Postgraduate Research Experience Survey*. [Online]. York: Advance HE. Available at <https://www.advance-he.ac.uk/knowledge-hub/postgraduate-research-experience-survey-pres-2021> [Accessed 15th March 2022].

Quality and Qualifications Ireland (QQI). (2019). *Ireland's Framework of Good Practice for Research Degree Programmes*. [Online]. Dublin: QQI. Available at: <https://www.qqi.ie/sites/default/files/media/fileuploads/Ireland's%20Framework%20of%20Good%20Practice%20Research%20Degree%20Programmes.pdf> [Accessed 14th January 2022].

Quality Assurance Agency for Higher Education (QAA). (2015). *Characteristics Statement: Doctoral Degree*. [Online]. Gloucester: QAA. Available at: <https://dera.ioe.ac.uk/24397/1/Doctoral-Degree-Characteristics-15.pdf> [Accessed 14th January 2022].

QAA. (2017). *Doctoral Research Students: What Should They Expect from their Academic Experience?* [Online]. Gloucester: QAA. Available at: https://www.qaa.ac.uk/docs/qaas/focus-on/qaa-viewpoint-doctoral-students.pdf?sfvrsn=62dof281_20 [Accessed 14th January 2022].

- QAA. (2020). *Characteristics Statement: Doctoral Degree*. [Online]. Gloucester: QAA. Available at: https://www.qaa.ac.uk/docs/qaa/quality-code/doctoral-degree-characteristics-statement-2020.pdf?sfvrsn=a3c5ca81_14 [Accessed 14th January 2022].
- QAA. (2021). *Advice on Doctoral Standards for Research Students and Supervisors: COVID-19 Support and Guidance*. [Online] Gloucester: QAA. Available at: <https://www.qaa.ac.uk/docs/qaa/guidance/advice-on-doctoral-standards-for-research-students-and-supervisors.pdf> [Accessed 10th January 2022].
- Rizvi, F. and Lingard, B. (2006). Edward Said and the Cultural Politics of Education. *Discourse: Studies in the Cultural Politics of Education* 27 (3), pp. 293-30.
- Servage, L. (2009). Alternative and Professional Doctoral Programs: what is Driving the Demand? *Studies in Higher Education* 34(7), pp/ 765-779.
- Smith McGloin, R. and Wynne, C. (2015). *Structural Changes in Doctoral Education in the UK: A Review of Graduate Schools and the Development of Doctoral Colleges*. [Online]. Lichfield: UK Council for Graduate Education. Available at: <https://ukcge.ac.uk/assets/resources/26-Structural-Changes-in-Doctoral-Education-in-the-UK-2015.pdf> [Accessed 21st March 2022].
- Statistics South Africa. (2017). *Education Series Volume V: Higher Education and skills in South Africa, 2017*. [Online]. South Africa. Available at: <https://www.policysa.com/images/HE%20StatsSA%20Report%202019.pdf> [Accessed 11th January 2022].
- Taylor, S. (2018). *Eligibility to supervise. A study of UK institutions*. [Online] Lichfield: UKCGE. Available at: <http://supervision.ukcge.ac.uk/cms/wp-content/uploads/2019/10/Research-Supervision-Eligibility-Report-Dr-Stan-Taylor-UK-Council-for-Graduate-Education.pdf> [Accessed 21st March 2022].
- Tazzyman, S., Moreton, R., Bowes, L., Wakeling, P. and Stutz, A. (2021). *Review of the PhD in Social Sciences*. Economic and Social Research Council (ESRC) and CFE Research. [Online]. Leicester: CFE Research. Available at: <https://esrc.ukri.org/files/skills-and-careers/review-of-the-phd-in-the-social-sciences/> [Accessed 14th January 2022].
- Treasury HM. (2021). *Build Back Better: our plan for growth*. [Online]. London: HM Treasury. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/968403/PfG_Final_Web_Accessible_Version.pdf [Accessed 20th March 2022].
- TrustAfrica. (2015). *Declaration and action plan from the 1st African Higher Education Summit on Revitalizing Higher Education for Africa's Future*. [Online]. Dakar: Trust Africa. Available at <https://www.trustafrica.org/images/Executive%20SummaryFINAL.pdf>. [Accessed 20th March 2022].
- University College Dublin. (2019). *New Centres for Doctoral Training to Link Seven SFI Research Centres with UK Higher Education Institutions*. [Online]. Available at: https://www.ucd.ie/innovation/news-and-events/latest-news/new_centres_for_doctoral_training/name,436029,en.html [Accessed 14th January 2022].

UK Council for Graduate Education (UKCGE). (2020). *Doctoral Degrees and the Potential Impact of Covid-19 on Current Postgraduate Researchers: What are the Significant Considerations?* [Online]. Lichfield: UKCGE. Available at: <http://www.ukcge.ac.uk/article/covid-19-doctoral-considerations-guidance-note-456.aspx> [Accessed 14th January 2022].

UKCGE. (1995). *Graduate Schools*. [Online]. Lichfield: UKCGE. Available at: <https://ukcge.ac.uk/assets/resources/1-Graduate-Schools-1995.pdf> [Accessed 21st March 2022].

UKCGE. (1998). *Graduate Schools*. [Online]. Lichfield: UKCGE. Available at: <http://www.ukcge.ac.uk/media/download.aspx?MediaId=1286> [Accessed 14th January 2022].

UKCGE and European Universities Association – Council for Doctoral Education (EUA-CDE). (2019). *The European Landscape of Doctoral Education: The Future of Research Collaboration*. [Online]. Lichfield: UK Council for Graduate Education. Available at: <https://ukcge.ac.uk/assets/resources/EUA-CDE-Joint-Statement-2019.pdf> [Accessed 20th March 2022].

UK Research and Innovation (UKRI). (2020). *Policy Statement UKRI COVID-19 PHASE 2 DOCTORAL EXTENSION FUNDING POLICY*. [Online]. Swindon: UKRI. Available at: <https://www.ukri.org/wp-content/uploads/2020/11/UKRI-11112020-COVID-19DoctoralExtensionsPolicyPhase2PolicyStatement.pdf> [Accessed 14th January 2022].

Universities UK (UUK). (2019). *The Concordat to Support Research Integrity*. [Online]. London: UUK. Available at: <https://www.universitiesuk.ac.uk/sites/default/files/field/downloads/2021-08/Updated%20FINAL-the-concordat-to-support-research-integrity.pdf> [Accessed 14th January 2022].

Universities UK International. (2020). *Future International Partnerships: Putting the UK at the Heart of Global Research and Innovation Collaboration*. [Online] London: UUK. Available at: <https://www.universitiesuk.ac.uk/sites/default/files/uploads/UUKi%2oreports/Future-international-partnerships.pdf> [Accessed 14th January 2022].

Vitae. (2018). *Exploring Wellbeing and Mental Health and Associated Support Service for Postgraduate Researchers*. [Online]. Cambridge: Vitae. Available at: https://www.vitae.ac.uk/doing-research/wellbeing-and-mental-health/HEFCE-Report_Exploring-PGR-Mental-health-support/view [Accessed 14th January 2022].

Vitae. (2019). *The Concordat to Support the Career Development of Researchers*. [Online]. Cambridge: Vitae. Available at: https://www.vitae.ac.uk/policy/concordat/Download_Concordat_PDF [Accessed 14th January 2022].

Wakeling, P. and Mateos-González, J.L. (2021). *Inequality of the Highest Degree*. [Online]. London: Sutton Trust. Available at: <https://www.suttontrust.com/our-research/inequality-in-the-highest-degree-postgraduate-access/> [Accessed 14th January 2022].

Wallace, M., Byrne, C., Vocino, A., Sloan, T., Pervan, S.J. and Blackman, D. (2015). *A decade of change in Australia's DBA landscape*. *Education and Training*, 57(1), pp. 31-47.

- Wellcome and Shift Learning (2020). *What Researchers Think About the Culture They Work In*. [Online]. London: Wellcome Trust. Available at: <https://wellcome.org/reports/what-researchers-think-about-research-culture> [Accessed 14th January 2022].
- Winter, T., Riordan, B.C., Hunter, J.A., Tustin, K., Gallop, M., Taylor, N., Poulton, R. and Scarf, D. (2021). A longitudinal Study of Mental Wellbeing in Students in Aotearoa New Zealand Who Transitioned Into PhD Study. [Online]. *Frontiers in Psychology*, 12, pp. 1715-1725. Available at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.659163/full> [Accessed 14th January 2022].
- Woodward, D. & Denicolo, P. (2004). *Graduate Schools in the UK*. [Online]. Lichfield: UK Council for Graduate Education. Available at: <https://ukcge.ac.uk/assets/resources/12-A-Review-of-Graduate-Schools-2004.pdf> [Accessed 21st March 2022].
- Woolston, C. (2015). Uncertain Futures. *Nature*. [Online]. (Career Feature) 22nd October. Available at: <https://www.nature.com/articles/nj7574-597a.pdf> [Accessed 14th January 2022].
- Woolston, C. (2019). PhDs: The Tortuous Truth. [Online]. *Nature*. [Online]. (Career Feature) 13th November. Available at: <https://www.nature.com/articles/d41586-019-03459-7> [Accessed 14th January 2022].
- Yudkevich, M., Altbach, P.G. and de Wit, H. eds., (2020). *Trends and Issues in Doctoral Education: A Global Perspective*. India: SAGE Publishing India.
- Zwetsloot, R., Corrigam, J., Weinstein, E., Peterson, D., Gehlhaus, D., Fedasiuk, R. (2021) *China is Fast Outpacing U.S. Stem PhD Growth. CSET Data Brief*. [Online]. Washington: Center for Security and Emerging Technology. Available at: <https://cset.georgetown.edu/publication/china-is-fast-outpacing-u-s-stem-phd-growth/> [Accessed 10th January 2022].

Appendix

Survey Questions

1. I have read and understood the above information about anonymity. I understand that, because my answers will be fully anonymised, it will not be possible to withdraw them from the study once I have completed the survey. I agree to take part in this questionnaire survey
2. Institution name
3. Your name / Your position within the institution / Your email address

Largest Organisational Structure Supporting Doctoral Education

4. What is the name of the largest organisational structure within the institution that supports doctoral education?
 - Graduate School
 - Doctoral College
 - Doctoral School
 - Doctoral Academy
 - Centre for Doctoral Studies
 - Other (please specify)
5. Which of the following groups fall within the remit of this organisational structure?
 - PGR - Doctoral Candidates
 - PGR - Masters by Research Students PGT - Taught Masters Students
 - Early Career Researchers (ECR)
 - All Research Staff
 - Other
6. At what level does this organisational structure sit within the institution?
 - Discipline
 - Cross-discipline
 - Department
 - School
 - Faculty
 - Cross-faculty
 - Institution
 - Other
7. How many full-time equivalent (FTE) staff are employed within this organisational structure?
 - 0-2
 - 3-5

- 6-10
 - 11-20
 - Over 20
7. (a) If known, and for comparison, please state how many FTE staff, dedicated to postgraduate education, are employed across the whole HEI/university.
8. Who provides leadership within this organisational structure?
- Dean
 - Director
 - PVC Research
 - DVC Research
 - Registrar
 - Other
8. (b) What is the FTE for this role?
9. Please rank the top-five strategic priorities in order of importance for this organisational structure. (If one or more of the options is considered to be a strategic priority, but does not rank within the top-5, then please select the final column.)
- Funding of doctoral education
 - Research ethics
 - Attracting doctoral candidates from overseas
 - Career development of doctoral candidates
 - Equality, diversity & inclusion
 - Open access / open science
 - Health and well-being of doctoral candidates
 - Increasing the number of doctoral candidates
 - Industry partnerships within doctoral education
 - Societal engagement with doctoral candidates
 - Student satisfaction
 - Enhancing the quality and profile of supervision
 - Improving submission rates, improving completion rates,
 - Implementation of the concordat for researchers, enhancement/development of research culture
 - Internal profile-raising of the needs of the doctoral community
 - External marketing of the university's doctoral programmes
10. How is this organisational structure funded?

11. Within this organisational structure to what extent are the following indicators used to evaluate doctoral education?
- Academic publications by doctoral candidates
 - Submission rates of doctoral candidates
 - Completion rates of doctoral candidates
 - Number of fall-back awards
 - Suspension/interruption rate
 - The satisfaction of doctoral candidates as shown in national survey (e.g.PRES)
 - The satisfaction of doctoral candidates as shown in internal surveys, focus groups, student voice, SU etc.
 - Qualitative indicators (e.g. peer review, evaluation committees)
 - Levels of internationalisation
 - Level of competitive funding received
 - Career outcomes of doctoral graduates
 - Relevance for society
 - Relevance for the economy
 - Diversity of doctoral population
11. (a) Are there any other indicators used to evaluate doctoral education? (if so, please list them)
11. (b) Please provide detail as to how the above indicators feed into mechanisms for change.

PGR Candidate Numbers and Recruitment

12. Do you intend to increase or decrease PGR candidate numbers in the next 5-10 years and if so, by how many (numbers / percentage)?
12. (a) Please explain the rationale for this policy
13. What level of involvement does this organisational structure have in:
- Development of new PG Programmes (Doctoral and Masters level)
 - Development of Professional Doctorates
 - Development of new campus-based PGR Programmes
 - Development of at-distance PGR programmes
 - Developing pre-doctoral bridging programmes
 - Supporting the development of international cotutelle programmes (dual/joint award)
 - Promoting and improving mobility opportunities
 - Supporting doctoral training programme grant capture
 - Enhancing the offer to attract high-quality research staff
 - Representing graduate/doctoral issues within the institution
 - Developing international collaborations
 - Website - internal and/or external
 - Liaison with student organisations

- Liaison with employers/industry etc
- Liaison with funders
- Publicity/PG prospectus

PGR Admissions and Progression

14. What level of involvement does this organisational structure have in the following:
- Registration/matriculation
 - Student records
 - Award of studentships
 - Admissions and recruitment
 - Monitoring progress of PGRs
 - Quality assurance/monitoring
 - Central co-ordination of responses to national consultations
 - Preparing returns to HESA (Higher Education Statistics Agency), funding councils etc
15. If there are any additional functions with which the organisational structure is involved, please list below along with the level of involvement:

Maintaining Quality in Postgraduate Programmes

16. What level of responsibility does this organisational structure have in the following:
- Gathering and acting upon opinions of PGRs
 - Improving the postgraduate experience
 - Programme reviews
 - Other quality assurance of graduate/doctoral programmes
 - Improving research progression, submission and completion rates
 - Considering complaints and appeals

Research Ethics and Integrity

17. What level of responsibility does this organisational structure have in the following:
- Compliance with ethics regulations
 - Promoting the research ethics and integrity agenda

Training & Development

18. What is the level of contribution this organisational structure gives to:
- Supervisor training & development
 - Supporting ECRs
 - Supporting middle career researchers through to Professor
 - Supporting PGR employability

- Supporting the mental health and wellbeing of PGRs
- Supporting the mental health and wellbeing of research staff
- Research ethics and integrity training

Professional Development

19. What level of involvement does the organisational structure have in:
- Provision of learning resources for doctoral researchers
 - Research methods training
 - Generic skills training
 - Teaching training
 - Arranging and managing placements and internships
 - Learning support for international doctoral researchers
 - Social events/activities
 - Providing dedicated space (social, study) for doctoral researchers
 - Providing career information
 - Monitoring career destinations

Equality, Diversity & Inclusion (EDI)

20. Is EDI at PGR level an explicit consideration in strategic decision-making within this organisational structure?
21. Please specify the metrics used by this organisational structure to measure EDI?
22. What are the general trends which have been identified, within this organisational structure or by the institution, in relation to EDI, at PGR level, over the past five years?
23. Which of the following measures have been implemented, in relation to EDI, at PGR level, over the past five years?
- Targeted funding opportunities
 - Raising awareness of postgraduate opportunities among widening participation undergraduates
 - Pre-enrolment bridging activities None
 - Other

Other Aims and Functions

24. Are there any other functions with which this organisational structure is involved? If so, please list below with the degree of involvement.

25. Does this organisational structure have any additional aims not listed previously? If so please provide details below, including the level of importance accorded to those aims.

Wider Support of/for Doctoral Education in the Institution

26. Are there any other structures (e.g. local doctoral training centres, faculty-based Graduate Schools or similar) within the institution that also support doctoral education?

Changes in Structures Supporting Doctoral Provision

27. What are the top three key changes in structures supporting doctoral provision which have taken place within the institution over the past 5 years?
28. Which, in your opinion, are the main internal drivers that have influenced these changes?
- International strategy
 - PGR recruitment strategy
 - Institutional reorganisation
 - Growth and diversification of programmes
 - Support for trans/cross/inter-disciplinary research
 - Enterprise & innovation strategy
 - Professional doctorates
 - None
 - Other
29. Which, in your opinion, are the main external drivers that have influenced these changes?
- Changes in funding
 - Changes in national/international policy
 - GCRF (Global Challenges Research Fund)
 - Industrial strategy
 - Equality, diversity & inclusion
 - Mental health & wellbeing
 - Covid-19
 - None
 - Other

The Institution

30. What is the size of the institution's postgraduate researcher (PGR) population (according to the information that your institution submitted to HESA in 2019)?
- 0-500
 - 501-1,000
 - 1,001-2,000
 - 2,001-3,000

- 3,001-4,000
 - 4,001-5,000
 - 5,001-6,000
 - Over 6,000
31. To what extent is doctoral education in the institution organised around the following levels or themes?
- The disciplinary level (e.g physics, history etc.)
 - The faculty level (e.g. natural sciences, social sciences etc.)
 - Themes or societal challenges (e.g energy, migration etc.)
32. In the institution to what extent are there rules and/or guidelines regarding the following aspects of doctoral training?
- Defining what is required in or of doctoral training programmes
 - The contents of doctoral training programmes
 - Assessment of training activities
 - Credits
33. Across the institution, what is the average time to completion (successful attainment of award) of full-time doctoral study?
- Less than 3 years
 - 3 years or more but less than 4 years
 - 4 years or more but less than 5 years
 - 5 years or more but less than 6 years
 - 6 years or more
34. When compared to 5 years ago, how has the average completion time changed?
- Increased
 - Remained the same
 - Decreased
35. Across the institution to what extent are there rules or guidelines regarding the following aspects of doctoral education?
- The contents of doctoral training programmes
 - Appointment of supervisors
 - Formal reporting by the doctoral candidate of their activities
 - Formal feedback to the candidate by the supervisor
 - Written agreement between the candidate, supervisor and/or institution
 - Conflicts between candidates and supervisors
 - Minimum number of meetings between candidate and supervisor
 - Voluntary training for supervisors
 - Compulsory training for supervisors
 - Maximum number of candidates per supervisor

36. Across the institution to what extent are doctoral candidates supervised by the following groups?:
- A single supervisor
 - Two supervisors, with one main or principal supervisor
 - A supervisory team - all internal to the institution
 - A supervisory team - including members from other institutions or organisations

UK Challenges and Opportunities

37. What, in your opinion, are the major challenges and opportunities currently facing doctoral education in the UK?
38. What changes do you think will affect doctoral education in the UK over the next 5 years?
39. What, if any, national developments in doctoral education would you like to see over the next 5-10 years?
40. What have been the major impacts of COVID19 on doctoral education in your institution?
- Increase in suspension rates
 - Extensions to registration
 - Supervisory meetings
 - Progression
 - Demand on QR to support PGR on studentships
 - Ability to deliver researcher development opportunities and initiatives
 - Submission and completion rates
 - Recruitment
 - Other
41. How do you think COVID19 will affect the future of doctoral education in the UK?

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UK REGISTERED CHARITY NO: 1061495