UNIVERSITY of York

IMPACT OF THE COVID-19 PANDEMIC CRISIS ON DOCTORAL RESEARCHERS IN THE UK

SUMMARY REPORT

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EXECUTIVE SUMMARY

This report provides summary of findings and recommendations of the '*Impact of the Covid-19 Pandemic Crisis on Doctoral Researchers in the UK*' project delivered by doctoral researchers at the Department of Education, University of York.

Our project was organised around the key themes of: supervision; facilities; working from home; impact on research; livelihood; and, productivity and wellbeing.

The questionnaire was opened on the 5th of April 2020, approximately one month after the World Health Organisation declared the COVID-19 pandemic, and just over two weeks after the start of the government-imposed national lockdown in the UK. Findings presented in this report include responses submitted up until the 23rd of April 2020, providing a snapshot view of the immediate impacts of the pandemic crisis – the experienced disruption and perceptions of supervisory, institutional and funder responses early in the pandemic.

Key Findings

Supervision

- Early on during the pandemic, the levels of satisfaction with supervision arrangements decreased significantly. Many doctoral researchers had not been able to schedule a supervision meeting since the beginning of the national lockdown, while others struggled with the new, online format of the meetings.
- Researchers from the EU and other countries outside of the EU reported lower levels of satisfaction with the supervision arrangements during the pandemic.

701
PARTICIPANTS

Facilities

- Just over two-thirds of respondents reported a negative impact of changed accessibility of university facilities on their PhD, citing negative affect on their productivity and ability to complete the thesis on time and to the required standard.
- The biggest noticeable impact was on the access to the library and its resources, with 72.6% respondents reporting negative impact of the pandemic. The next highest change has been noted for the access to researcher training and development (with 61.4% of respondents reporting impaired access). Conversely, a larger proportion of part-time and distance learning respondents have reported no change in access, or an improved access to training, which prior to the pandemic has often been available in-person and on-campus only. Information Technology (IT) was the third most often reported as negatively affected facility - 56.1% of respondents said that their access has been impaired.

Working from home

- The satisfaction levels with the working arrangements during the pandemic, i.e. working from home, have been significantly more negative than before the pandemic. Only 29.1% of respondents reported being satisfied or very satisfied with their workspace. This affected even those usually working primarily from home, with the levels of 'satisfied' responses amongst this group reduced to by 16.1%.
- While the stay-at-home orders were imposed by the government, many universities were perceived to be slow to make decisions about, and communicate to their doctoral researchers regarding the closure of working spaces on campus. Many doctoral researchers lacked a quiet space to work in their home (37.4%) and lacked appropriate working space - a desk or a table (26.3%). Many missed facilities and equipment on campus, while others noted lack of peer support or immediate access to their supervisors.
- Many doctoral researchers reported impact on physical and mental health, noting that they need the separation between working and homelife, which has become close to impossible, in particular for those living in shared accommodation with others, and now confined to working, eating and sleeping in one room.

Impact on research

- The vast majority of respondents - whether at a stage of pre, mid or post data collection - stated that the pandemic and subsequent lockdown had impacted on their research plans (89.2%).
- Over three-quarters of the open comments referred to data collection having been immediately suspended by the pandemic. One-third of those providing text responses had already begun to revise their research strategy in light of the pandemic. Typically, this meant moving data collection - in the case of interviews and focus groups - online; shifting the focus of the research; or, relying on previously collected or publicly available data.

For some, this gave the impression of a - doctoral project. Several later-stage doctoral researchers in particular referred to the importance of supervisor guidance in determining just how 'much' data would be 'enough' for achieving the requirements of a PhD.

Livelihood

- Of those reporting that they undertook paid employment prior to the pandemic, just under half stated that their employment had ceased when the lockdown came into force (45.6%), with a minority (11.5%) reporting having had their employment contract terminated.
- Consistent to the scale of paid employment disruption reported by doctoral researchers, some 38.1% stated that the pandemic had negatively impacted on their finances. Given the differences between doctoral funding sources and reliance on paid employment, it is unsurprising to observe that the financial hardship generated by the pandemic has not been experienced equally among doctoral researchers. Scholarship holders are among the least affected; whereas loan, self-funded and writing up doctoral researchers reported the highest rate of impact.
- Despite the early timing of the survey, around one-third of respondents related that their institution had already introduced measures to ease the financial pressures associated with lockdown. Most frequently, this involved the establishment of a hardship fund for students (32.4%).

Productivity & Wellbeing

- The vast majority of respondents reported that the pandemic and lockdown had negatively impacted their capacity to work productively (86.8%). A similarly high proportion related that their wellbeing had been deleteriously impacted (82.7%).
- Just over one-third of the sample expected that their completion date would be delayed because of the pandemic (38.8%).
- International researchers from countries outside the EU reported significantly higher disruption to their productivity than researchers of all other domiciles.
- Female respondents reported significantly higher disruption to their productivity than their male counterparts. This difference is not explained by the varying caring responsibilities of male and female researchers.

Our current analysis provides early evidence that can be used to develop a proactive approach to alleviate the pressures on doctoral researchers during the ongoing crisis, and in anticipation of future consequences. Our ongoing collaboration will examine those medium and long-term ramifications of the early lockdown as well as the impact of evolving issues. In doing so, our work will continue to identify factors that affect doctoral researchers, which may guide institutions to develop and implement policies to support them.

1. Introduction

The coronavirus pandemic and public health restrictions put in place to limit it are expected to impact Education more greatly than any other sector (Office for Budget Responsibility, 2020). The challenges facing UK higher education have prompted rapid investment and policy decisions, with universities reducing spending and introducing recruitment freezes, and government measures to stabilise admissions and bring forward research funding. As the new academic year begins, however, there remains considerable uncertainty as to the long-term consequences of the pandemic for the UK higher education sector.

Amid this context, the disruption caused by the pandemic to doctoral researchers has been a more peripheral concern. At the beginning of April, UK Research and Innovation (UKRI) announced that UKRI-funded doctoral students in their final year would receive a funded extension of up to six months (UKRI, 2020). Later that month, additional guidance followed for UKRI-funded students unable to undertake their research as planned, with several institutions mirroring this position, securing extensions for funded students, increasing hardship funding and relaxing evidence requirements for extension requests. Despite these developments, a number of voices suggested that these responses did not go far enough.

In late April, a cross-institutional collaboration of postgraduate research students in the UK began lobbying for extensions for doctoral students of all stages, regardless of funding source. An article in the Times Higher Education outlined the aims of this effort, which include ensuring continued income for students pausing their studies due to the pandemic, and enhancing pastoral and mental health support (Goldstone, 2020). Writing on the higher education policy platform, Wonkhe, another group of doctoral students highlighted the implications of one institution's plans to freeze graduate teaching and laboratory assistant posts for two years (Neag, Kaluzeviciute & Arigho-Stiles, 2020). Added to this is the impact on the day-to-day work of research. After months of closure, laboratories are open on a limited basis, in-person data collection remains impossible for many, conferences are lacking, and work may be undertaken in less than ideal surroundings (Hamburg Research Academy, 2020). Supervision, training and assessment have shifted online with little time to prepare.

Clearly, the pandemic has and continues to affect the everyday lives of most doctoral students – and in some cases, extensively so. These disruptions, however, do not end with the individual student. More broadly, the pandemic is likely to impact significantly on: the economy and researcher productivity; he mental health and well-being of doctoral researchers; efforts to ensure equality, diversity and inclusion in the research system; and, it raises questions about the skills and knowledge needed by doctoral graduates of the future. This report shares new empirical insights into the lived experiences of UK doctoral researchers during the early days of the coronavirus pandemic and lockdown. It is structured as follows.

The survey design and methods are outlined (2), before an overview of the survey sample is presented (3). Headline findings from the survey are then shared (4), across the themes of: supervision; facilities; working from home; impact on research; livelihood; and, productivity and wellbeing. Reflecting on these findings, recommendations for the sector are offered in conclusion (5).

2. Methods

2.1 Project Aims

The aim of this research project was to gain an insight into the extent of disruption experienced by doctoral research in the UK due to the pandemic, and their immediate perceptions of supervisor, institutional and funder responses.

2.2 Research Design

A descriptive design utilising an online (Qualtrics) questionnaire was employed, with a mixture of quantitative and qualitative, open-ended questions asked. Questions were grouped under six themes of: supervision; facilities; working from home; doctoral research (data/methods); livelihood; productivity and general wellbeing.

The full questionnaire consisted of 14 items covering demographic characteristics including gender identity, stage and mode of study, institutional affiliation and subject area, fee status, parental educational background, accommodation type prior to and during the national lockdown. Closed questions (30 items) of different types were asked, including polar questions, questions about satisfaction using five-point Likert scale, frequency, and multiple-choice questions. Open responses (15 items) were also included, namely about the support measures implemented by respondents' institutions, respondents' own ideas about how their universities and other bodies (e.g. funders) could support doctoral researcher affected by the crisis, and – for those who have reported to have been affected – about the specific impact of the pandemic/stay at home orders on the their doctoral research and general wellbeing.

The 59 tiem questionnaire was piloted with a small number of doctoral researchers for general readability and acceptability. Suggestions for clarity and design were acted on before general distribution.

Selection Bias

As with most population-based surveys, results may be affected by non-response bias, due to self-selection of participants. While this is difficult to quantify, we acknowledge that a survey on the 'impact of the pandemic' is most likely to be completed by those experiencing problems or who have in some way been adversely impacted by the crisis in question, and thus the negative impact claims based on the data available may be exacerbated. Bias analysis of the responses received further revealed that the response rate was positively associated with female gender, (full-time) mode of study, and non-science subject area of study. The sample size and demographics are described in the next section of this report and are compared to the most recently available HESA data.

2.3 Ethics

Prior to the commencement of data collection, approval was sought from the relevant university ethics committee. A consent form including information about the purpose of the study preceded the online survey. Responses were anonymous. Consent was implied with a submission of survey responses.

2.4 Distribution

Current doctoral researchers enrolled at a UK university were invited to participate in the survey. The survey was promoted online, in particular via social media (Twitter, Facebook, LinkedIn). The questionnaire was opened on the 5th of April 2020, approximately one month after the World Health Organisation declared COVID-19 pandemic, and just over two weeks after the start of the government imposed national lockdown in the UK. Findings presented here include responses submitted up until the 23rd of April 2020, providing a snapshot view of the immediate impacts of the pandemic crisis – the experienced disruption and perceptions of supervisor, institutional and funder responses early in the pandemic. While the situation has moved on in terms of funder and institutional support and policy, our findings suggest that the support for doctoral research was somewhat delayed in time, with institutions focused initially on taught students and the transition to home working for staff. Moreover, some of the issues we uncover are likely to have longer-term ramifications that supervisors, institutions and funders are yet to anticipate. We consider these briefly in this report and intend to monitor these in the future.

2.5. Data Analysis

Following removal of incomplete questionnaire responses, data were coded for use in SPSS and NVivo. Notably, we found low item nonresponse rates for all questions, including the open-ended ones. Respondents have indeed often provided in-depth (one or two paragraph long) free-text answers, reflecting the extensive impact of the pandemic crisis on the research and everyday lives of doctoral students.

Quantitative Data

Demographic and quantitative data were analysed using descriptive frequencies, with paired sample t-tests performed for relevant items (for example, where we have asked about satisfaction levels with supervision or working arrangements prior to the pandemic, and during the lockdown). Independent sample t-tests were used to look for significant differences in experiences/perceptions between the genders, HEI region, mode and stage of study, fee status, subject type, respondents with vs. without caretaking responsibilities, and for some questions, funding source).

Qualitative Data

Separate open-ended questions responses were coded independently by the three researchers using NVivo and were analysed thematically following the framework approach as developed by Clarke and Braun (2013). All members of the research team contributed to the process of thematic coding, inductively developing and refining the codes as they emerged from the data. A mid-point check meeting was organised to discuss the emerging themes, with the researchers reviewing and commenting on the coding of others. Any disagreements have been resolved at this stage with all responses re-coded, where necessary, for example where it was suggested that codes can be grouped or collapsed into wider themes. In addition, we double blind-coded a sample (10 responses for each question) and communicated any disagreements to improve reliability.

This Report

While the summative analysis of this data is ongoing, with the aim of being published in the future in a more detailed form, we have intended from the very beginning to release and distribute widely a summary report, to share our key findings, to guide decision-making of the universities and other bodies both immediately, while the current crisis is still ongoing, and in the future, should another health or other emergency situation affect institutions and individuals in similar ways. We have selected the key findings and grouped these for purposes of this report under the six overarching themes as listed above. We believe that these findings clearly illustrate that doctoral researchers in the UK are facing direct disruption to their research and personal lives, in ways which must not be overlooked by universities and funding bodies.

3. Survey Respondents

The final dataset contains responses from 701 individual doctoral students. Since the survey made use of both optional questions and logic branching, the number of respondents reported for each question will sometimes differ from this total in the report.

3.1 Demographics

Table 3.1, below, sets out the key academic and demographic characteristics of the survey sample. Where possible, these are compared to the most recently available HESA data on postgraduate research researchers (from 2018/19).

Approximately one-third of respondents were in their first year of doctoral study at the time of completing the survey, with all others being distributed across other years. This is broadly comparable with HESA population data on postgraduate research students. Part-time researchers are under-represented in the sample (13.5%, compared to 23.5% reported by HESA). Some 6.8% of survey respondents noted they were studying by distance; HESA does not publish information on this mode. UK and EU domiciled researchers are slightly over-represented in the survey sample, while the proportion of non-EU international researchers completing the survey is about half of that recorded by the HESA data (15.4%, compared to 28.7%). We should therefore be mindful that the full range of experiences of international doctoral researchers may not be reflected in the survey dataset.

More significant discrepancies are observed in the gender of survey respondents, in comparison to HESA data. The survey attracted considerably more female respondents than male (74.0% of survey respondents were female; in contrast to 48.5% of the wider doctoral population). As will shortly be discussed, in contrast to male respondents, females related more negative impacts of the pandemic on productivity and wellbeing.

It is therefore plausible to suggest that female doctoral researchers may have had greater motivation to complete the survey and share their experiences. Nevertheless, it is important to note that the full spectrum of experiences may not be represented by the respondents in our survey. A minority of respondents reported caring for dependents (children or other family members). At almost 16.0%, this group is, however, not insignificant in number, and will be examined in ongoing analysis. HESA does not publish equivalent information on the caring responsibilities of doctoral researchers.

Arts and humanities and social sciences researchers are somewhat over-represented in the survey sample; which is perhaps not surprising given the disciplinary focus and professional networks of the research team. Fewer researchers in the science disciplines – particularly the physical sciences and engineering – responded to the survey. Nevertheless, the numbers within each subject area are sufficient to explore differential experiences of doctoral study through the pandemic.

Doctoral researchers are also considered by institution type (table 3.1). The rationale for exploring the survey data in this way is that research culture and income is known to vary significantly by university type (Boliver, 2015). The categories used are those previously applied by higher education researchers to demonstrate the differences in research performance across UK universities within and across formal university mission groups (e.g. Wakeling & Savage, 2015). 'Golden Triangle' researchers – enrolled at Oxford, Cambridge, Imperial, the London School of Economics, King's College London or University College London – are underrepresented in the survey (12.0%, compared to 20.4%). Russell Group researchers are overrepresented (44.2%, compared to 34.4%), which likely reflects the institutional affiliation of the research team. The proportion of doctoral researchers registered at 'other pre-1992' institutions is similar across both survey and HESA data (27.0% and 25.6%). Doctoral researchers at post-1992 institutions are underrepresented in the survey dataset (16.8%, while they constitute around one-quarter of the doctoral population). Distribution by region of the UK is broadly similar across the survey dataset and HESA records.

Though HESA does not publish data on prior institutions for doctoral researchers, it is interesting to note that slightly fewer than half of survey respondents also completed their undergraduate degree at their doctoral institution. Capturing this information of first-degree background will enable us to explore whether advice, guidance and support is more readily accessed and favourably viewed by those who have greater familiarity with their doctoral institution.

	%	
	Survey	**HESA**
Stage of study		
First year	26.8	30.1
Other years	73.2	69.9
Mode of study		
Full time	86.5	76.5
Part time	13.5	23.5
Distance learning (full or part time)	6.8	-
Domicile		
Home	68.9	58.8
EU	15.7	12.5
Non-EU international	15.4	28.7
Gender		
Female	74.0	48.5
Male	22.2	51.3
Other	3.9	0.2
Dependants		
Yes	15.9	-
No	84.1	-
Doctoral subject		
Arts and Humanities	13.6	17.3
Biological sciences	19.2	15.2
Biomedical sciences	21.8	15
Physical sciences and engineering	18.8	33.7
Social sciences (incl. education)	24.0	20.8
Combined	2.6	0.0
Type of HE institution		
Golden triangle	12.0	20.4
Russell Group	44.2	34.4
Other pre-1992	27.0	25.6
Post-1992	16.8	26.3
Region of HE institution		
England	80.2	81.8
Northern Ireland	1.8	2.2
Scotland	10.8	12.0
Wales	7.2	4.0
Undergraduate degree		
Completed at doctoral institution	41.7	-
Completed elsewhere	58.3	-

Table 3.1. Demographics of survey sample. Note: where possible, HESA data for postgraduate research students registered in 2018/19 are included for comparison. Survey n=635.

4. Results

4.1 SUPERVISON

Just over half of respondents usually have access to two supervisors, with about one-fifth having access to one supervisor, or three. A small number of respondents have a larger supervisory team of four or five staff members. Although a majority of respondents were 'Satisfied' or 'Very satisfied' with supervision both prior to the pandemic (82.2%), the decrease in satisfaction with the supervision arrangements for respondents overall, has been significant at the time of the survey (n=692, p<.001), dropping by almost twenty percent, with 63.5% respondents reporting high levels of satisfaction with the new arrangements (table 4.1.1.).

Level of satisfaction	Pre-Covid (n=699)	At time of survey (n=693)
Very dissatisfied	2.7	5.5
Dissatisfied	4.6	8.7
Neither satisfied nor dissatisfied	10.4	22.4
Satisfied	47.6	42.3
Very satisfied	34.6	21.2

Table 4.1.1. Level of satisfaction with supervision (%).

More than half of those who were dissatisfied with arrangements ('Dissatisfied' or 'Very dissatisfied') at the time of survey were those who had not yet been able to schedule a supervision meeting. Although some respondents reported increased frequency of supervision during the pandemic (as illustrated in table 4.1.2.), about a tenth of those felt dissatisfied with the supervision arrangement, indicating that it is perhaps the mode of supervision and not the frequency that they struggle with. Indeed, 81% of all respondents reported being 'suitably supported' by their supervisor at the time of the survey. We have noted a relatively large (12%) increase in the 'Neither satisfied nor dissatisfied' responses in relation to the supervision arrangements, indicating that at the time, PGRs were not yet sure how these will work in practice, or long term.

Frequency of supervision	Pre-Covid (n=701)	At time of survey (n=569)
As often as necessary (incl. more than once weekly)	2.4	18.5
Weekly	19.0	19.3
Every 2 weeks	20.4	11..4
Monthly	40.7	16.1
Every 6 weeks	2.4	1.1
Every 2 months	11.4	1.6
Less frequently than every 2 months	3.1	0.4
Other	0.6	1.3
Unknown*	0	18.9
Not yet scheduled**	n/a	10.8

Table 4.1.2. Frequency of supervision, pre and during the pandemic (%).

*The frequency of supervision during the pandemic was recorded in an open-ended question about supervision arrangements. As the question did not ask about frequency of meetings specifically, some respondents have not indicated the planned/existing frequency for formal supervision meetings.

** This is sometimes noted as negative, if supervisors have not responded to PGR query about setting up a meeting, but a handful of respondents note this 'break' from formal supervisions as a positive, as they are unable to produce any work during this time and appreciate the space supervisors are affording them.

Compared to 'home' domicile PGRs, researchers from the EU and other countries outside of the EU reported lower levels of satisfaction with the supervision arrangements during the pandemic (11.3% of home PGRs reported that they are 'Dissatisfied' or 'Very dissatisfied' with their current arrangements, compared to 14.8% of EU PGRs; p=0.003; and 20.2% of non-EU PGRs; p=0.004).

Respondents' responses as to what the ideal format of a supervision would be, or indeed how frequently they should take place, varied greatly. A common proposal was for meetings and communications not focused solely on formal and academic aspects of PhD life, but instead that informal, social conversations should be timetabled both among doctoral researchers and staff to connect students to their institutions even when campus life was on hold.

This format was suggested as benefiting not only doctoral researchers' mental health, but also as a way of confronting the culture of overwork in academia, building a community and support networks. One second year doctoral researcher highlighted that:

> *Regular check-ins would be a good idea, just to see how students are progressing, and just as importantly, how they are feeling and coping. There is a culture in academia where rest is seen as a reward rather than a vital part of the work life balance. I suspect for many, the epidemic will worsen a poor balance and I feel that regular check-ins may help mitigate this.*

Since collecting this data, many institutions are now asking supervisors to check in on their students informally at least once a week which is a positive move towards considering what would be most impactful for doctoral researchers. Additionally, several respondents have further called for adjusting of expectations of productivity, impossible to be maintained at pre-pandemic levels, specifically a second year physical sciences respondent noted that:

> *Expectations should be adjusted to expect part-time work, and supervision should be based on the idea that any work done at all in these trying times is more than adequate.*

Some respondents also indicated that they wanted more empathy from their supervisors given the situation, but also that this would extend both ways (second year female researcher in the South of England): *'I guess the point is that supervisions should be conducted flexibly and with compassion and empathy (on both sides)'* and (second year female researcher in the North of England) *'supervisors should be more empathic and less pressing'*. Consideration for staff was very common in the responses from respondents, indicating that doctoral researchers are well-aware of the pressures put on their supervisors in this trying situation but also implying that they do sometimes feel that their feelings are not always considered by their institutions in this way. It was noted by several respondents, such as this first year researcher in the North of England, that *'many students have other responsibilities (childcare, caring for family members) that put a strain on their ability to conduct research'*, better flexibility with deadlines should be a consideration to support those in this situation moving forward. We are aware that some institutions have already begun to put in place more flexible approaches to progression and submission, but that this should be monitored as the longer-term effects of the pandemic unfold over the coming academic years. .

With regards to the mode of supervision there was little room for flexibility given that campuses were closed and both staff and doctoral researchers were under stay-at-home orders. However, it is important that institutions are aware of some of the limitations of remote video supervisions and offer support to overcome these in the future.

4.2 FACILITIES

The vast majority of respondents stated that their access to university facilities during the pandemic has been impaired. Perhaps unsurprisingly, just over two-thirds of respondents reported a negative impact of changed accessibility of university facilities on their PhD (figure 4.2.1), citing negative affect on their productivity and ability to complete the thesis on time and to the required standard.

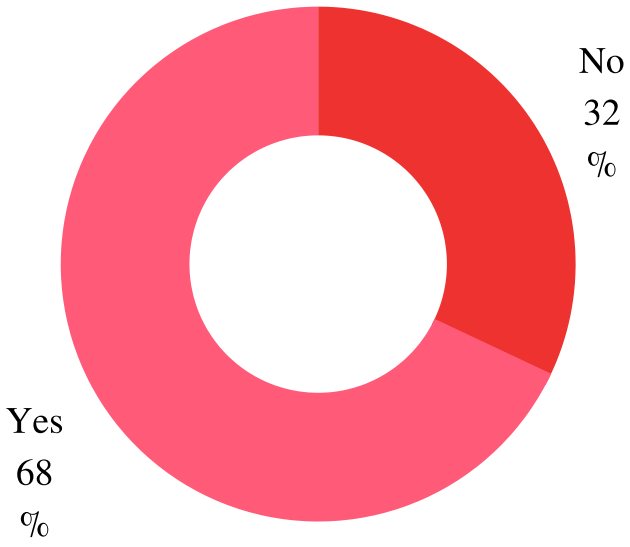

Figure 4.2.1. Negative impact of changed accessibility of university facilities. (n=690)

Notably, at the time of the survey, several respondents also reported that they were unaware of any measures put in place by their institution to counter these difficulties, stating that the *'communication has generally been poor. The university might have done something but if they have, I'm not aware of it.'*

The biggest noticeable impact was on the access to the library and its resources, with 72.6% respondents reporting negative affect (prior to pandemic, more than half of respondents have been using the library facilities at least fortnightly). Full-time PGRs with a traditional mode of attendance reported impaired accessibility of these facilities more often than their part-time ($p=0.020$) and distance learning counterparts ($p<0.001$), who are perhaps more used to accessing academic resources electronically. Many respondents noted that their libraries were working to support them, extending book loans, waiving fees, sharing guidance about open access resources and moving many resources online. However, inability to access books usually stored in the 'key texts' space, or archives, access to inter-lending facilities and libraries inability to purchase texts simply not available as ebooks made it difficult for doctoral researchers, *'leaving many of the chapters and arguments incomplete and unfinishable'*. This has a direct impact on some PGRs financial situations, as they face the choice of *'going without'* a relevant resource, or purchasing a physical copy using their own funds.

While some respondents described their library as being open for *'as long as possible'* and doing their best considering the circumstances, others noted that, because of the unchanged limits on borrowing, they were not able to check-out all of the books they needed, or that they have received insufficient notice of library closure. A final-year respondent shared her frustration, explaining:

> *As someone who does not live in [campus city] and must spend 1+ hour travelling by multiple trains each way, the decision to close library facilities at such short notice (…) left me with no possibility of accessing the materials I needed.*

Much has moved on since the early stages of the lockdown in the Spring of 2020, with many services resuming later in the summer and including, for example, click-and-collect, postal services and bookable study spaces. However, the substantial time without access to library service, or with a very restricted access should be borne in mind when assessments or progress against expected milestones are being made in the future.

The next highest change has been noted for the access to researcher training and development (with just over half of respondents reporting to access this at least monthly before the pandemic). Some 61.4% of respondents have felt that their ability to access this has been impaired. Again, full-time, traditional learning PGRs (in particular those in years 2-4 of registration) reported being negatively affected more often than part-time ($p<0.001$), distance learning ($p<0.001$), and first year PGRs ($p=0.034$). A larger proportion of part-time and distance learning respondents have, in fact, reported no change in access, or an *improved* access to training, which prior to the pandemic has often been available in-person and on-campus only. Indeed, even early on during the pandemic, many universities were reported to be offering at least some of their researcher development courses remotely. Nevertheless, such online training assumes, as noted by some respondents, that all doctoral researchers have access to IT equipment and the internet at home.

Information Technology (IT) was, in fact, the third most often reported as negatively affected facility - 56.1% of respondents said that their access has been impaired. Some two-thirds of respondents reported to have used IT facilities at least fortnightly before the pandemic. Several respondents, in particular those in the later stages of their PhD and therefore working on the analysis and writing up of their findings, provided a more detailed insight into the issues faced when trying to complete their work without adequate equipment or support through the open text comments:

> *My main impact is that I only have a small laptop that is very temperamental and not totally suitable for my research. I have not been offered another one by my university, or my DTP and I have been told I cannot use my research grant to buy one.*

> *I am currently in the middle of data analysis and I was not able to attend IT training for the software I need to use and so now I am having to self-teach this.*

As noted previously, several respondents were critical of their institutions' lack of communication. A second-year sociology researcher explained how her institution were sending emails to doctoral researchers, but with a somewhat negative, in her view, overall message:

> *I am not aware of any [measures in place]. I am also concerned that the University's message to students who were struggling to access IT equipment and the internet was that "in the case that we are unable to support students with access to equipment or that students are unable to source it themselves we will recommend that students suspend their studies and take a leave of absence." The university has not offered any comprehensive guidance on how they intend to support students, and the message that is given appears to be that these students, who may be affected disproportionately by financial insecurity during this time (a great many students work to support their studies) should be put into an even more precarious position by suspending their studies.*

Other facilities, including careers services, maths skills support, writing skills support and language skills support appear to be used by doctoral researchers less frequently in general (49.2%, 17.7%, 35.8% and 17.7% of doctoral researchers reportedly used these at least some of the time prior to pandemic). However, even here a negative impact was felt by respondents – about a quarter of respondents felt that access to these facilities or services has been impaired.

4.3 WORKING FROM HOME

Limited access to university facilities is closely linked to the issue of enforced working from home orders, as imposed by the government.

Majority of respondents (76%) reported working from an office, laboratory, library, or another space on campus prior to the pandemic. Just under 20% of doctoral researchers reported working primarily from home. Majority of respondents (82%) were somewhat or very satisfied with their working arrangements. Notably, of those working on campus, 85.3% of respondents reported being satisfied or very satisfied, while only 69.4% of those working from home felt this way about their working arrangements.

The satisfaction levels with the working arrangements during the pandemic, i.e. working from home, have been significantly more negative. Only 29.1% of respondents reported being satisfied or very satisfied with their workspace. This affected even those working primarily from home already, with the levels of 'satisfied' responses amongst this group reduced to 53.4%.

While the stay-at-home orders were imposed by the government, many universities were perceived to be slow to make decisions about, and communicate to their doctoral researchers about the closure of working spaces on campus. While some 29.6% of respondents reported receiving a one or two weeks notice, the majority had only one or a few days to return to campus and collect their belongings. Some 9.3% of researchers received just a few hours notice. While for many the notice from university was sufficient, almost 38% of respondents felt that their university should have given them more time.

We have asked respondents about their access to facilities useful for doctoral research and thesis writing at home. Although the majority have access to a PC or a laptop and Wifi/Mobile data, a small percentage have not (1.2% and 1.5% respectively). A significantly higher number of respondents reported lack of a quiet space to work in their home (37.4%) and lack of an appropriate working space - a desk or a table (26.3%). Some 459 respondents have listed additional facilities they have missed while working at home, with the most often cited ones including: software packages and processing power, storage, microphone or webcam; second monitor; printer; access to data (e.g. where stored on a campus drive); access to physical books; and - of course - access to laboratory or archives.

Over three quarters of respondents reported a negative impact of the imposed working from home on their PhD. Those usually working on campus or in another space (but not at home), reported higher impact (87.2%) than those primarily working from home before the pandemic. Nevertheless, 37.8% of those respondents have also experienced difficulties. Some of these difficulties are closely related to issues explored elsewhere, in particular the reduced productivity, as noted, for example, by a second year Languages researcher:

> *My main problem is that I used to work at uni every day. I cannot seem to get into a working rhythm at home. My husband and I share a small space and he is always on zoom for his work so I cannot focus. The lack of routine is stressing me out and I feel anxious all the time.*

Having to share or give up working space for a spouse also forced to work at home has been mentioned by several other respondents:

> *I am a part-time, mature student with two children, a full-time job and a partner who is required to work from home (she is a college lecturer). What was a quiet, relaxed working space became a busy family space once I lost access to the university workspaces. I now share [a] workspace with [my] partner, who needs access to home-office in order to do her job (which takes priority over my studies, for obvious reasons). I am also doing my job from home, attempting to keep a small charity in business. Juggling all these has become exceptionally difficult and time that has been devoted to PhD has been relegated.*

Indeed, increased caring responsibilities were impossible to overcome for many, including an Education researcher in her writing-up year:

> *I can only spend very limited time on my research work, which could be one hour or less in some cases. Having toddlers at home all day and having to work with them needing attention almost all day means I struggle to spend time on my research. I am more productive working in quiet places, which is impossible given my living arrangement. As long as I am home, I have to keep an eye especially on my one year old. Although I have a desk, monitor and laptop to work with, I do not have a separate room for study. Consequently, the children have free access to interrupt me when working.*

Many respondents also noted lack of peer support or immediate access to their supervisors. Others reported impact on physical and mental health, noting that they need the separation between working and homelife, which has become close to impossible, in particular for those living in shared accommodation with others, and now confined to working, eating and sleeping in one room.

4.4 IMPACT ON RESEARCH

The majority of respondents (73.5%) reported they were working on an empirical PhD; which was defined for the purposes of the survey as involving the collection of primary data for analysis. A similarly large majority (73.1%) were yet to embark upon their planned data collection at the time of the survey.

The vast majority of respondents – whether at a stage of pre, mid or post data collection – stated that the pandemic and subsequent lockdown had impacted on their research plans (89.2%). A wealth of open text comments (n=307) provide insight into the varied nature of these consequences. Over three-quarters of the open comments referred to data collection having been immediately suspended by the pandemic. Commonly, this resulted from the sites of data collection being closed: laboratories, schools, prisons, for example – together with the introduction of international travel restrictions. One-third of those providing text responses had already begun to revise their research strategy in light of the pandemic. Typically, this meant moving data collection – in the case of interviews and focus groups – online, shifting the focus of the research, or relying on previously collected or publicly available data. For some, this gave the impression of a 'reduced' doctoral project. Several later-stage students in particular referred to the importance of supervisor guidance in determining just how 'much' data would be 'enough' for achieving the requirements of a PhD:

> *My supervisors have indicated that for the purposes of my PhD thesis, the data already collected will be sufficient, alongside an explanation of why the data collection was paused.*

A final-year physical sciences student relayed a similar sentiment – but concluded that the pandemic meant she would not produce 'as good a thesis':

> *I am working on the assumption that the data I have is all I am getting. I am writing up as if this is the case. It means that there will be some gaps in my thesis, however I hope that the examiners will be understanding, and if I am able to, I will be able to run some of these experiments as corrections following my viva.*

For other students, the notion of adapting and proceeding with doctoral research during the pandemic was problematic. The ethical issues of continuing with data collection were raised by thirty participants. Many students referred to the uncertainty and anxiety prompted by the pandemic – a matter that they did not wish to amplify for their participants. For those conducting research in healthcare settings, the ethical complexities of proceeding regardless were obvious. However, students working with quite different research populations expressed similar concerns. A social policy student, who was about to embark on data collection, had decided to pause, reasoning:

> *As with everyone in this pandemic, participants are increasingly feeling stressed and upset about their situation. My research could be an extra burden on them that they currently cannot face and could lead to higher levels of attrition. It also means that participants are distracted during interviews.*

A minority of students reported being encouraged by their supervisors to push ahead with data collection, with one participant in health sciences referring to his supervisor's view that 'circumstances are likely to get worse before getting better… [there is] a small window of opportunity.' Another student working in health sciences reflected on the tension generated by such advice, revealing:

> *Supervisors surprised me by being keen on data collection now. In honesty, whilst it comes across as being supportive, I am not sure whose benefit that data collection now is for, them or me?*

Several students reported having to resubmit ethics applications in order to proceed with data collection during the pandemic. Related to these ethical concerns, a smaller number of students believed that the extreme circumstances of lockdown may diminish the validity and reliability of any data collected during this time. Some participants worried that switching from face-to-face to online data collection part way through their research would undermine the comparability of observations across a dataset. Others remained unconvinced that equivalent depth and rapport can be achieved through online data collection. Many students commented on how, regardless of the topic of the research, the pandemic and lockdown now framed their interactions with participants. A law student, who had switched to online interviewing, reflected:

> *Part of my thesis involves asking students about their experiences of university and how they feel their university deals with them - I have no doubt my findings will have been affected by the pandemic as every student I have interviewed since has made some reference to Covid-19.*

A minority of early-stage students – in fields spanning business, education, and environmental science – opted to address this by revising their data collection to explicitly foreground the impacts of Covid-19. Those somewhat further along in the research process noted that the lockdown had thwarted their attempts to recruit participants to their study. This difficulty was not limited to those working in healthcare settings: the transition to online working and the professional and domestic pressures faced by many during the lockdown were attributed to slow recruitment and a high number of participant withdrawals.

Around thirty of those providing open comments referred to their data collection as being 'on pause' indefinitely, and a similar number expected that the submission of their thesis would be delayed as a result. Several respondents had enquired about formal extensions, but the likelihood of such an extension being funded or otherwise financially supported by their institution remained unclear at the time of the survey. As one institutionally funded physical sciences student explained:

> We have been told that we will likely be able to claim a deadline extension, however, we are unlikely to receive extra funding to help cover the cost of the extension.

Continuation fees – typically charged to students who have not submitted their thesis by the end of their normal registration period – were another source of concern. Though some institutions have since confirmed that they will not charge continuation fees to students whose work was delayed due to Covid-19, for many this remained unclear at the time of our survey. A final year engineering student explained that even if financial support became available for an extension period, there would still be other financial challenges to navigate – not least a housing tenancy, which was due to conclude with the end of their normal registration period.

Among those providing text comments, some two-fifths reported that they had received no support in proceeding with or amending their doctoral project at the time of the survey. Some students reasoned that the pandemic was still in its early stages – 'nobody knows when this is going to end and so no one is able to give me advice' – and that much of the experience was unprecedented for all involved – 'this is the first time in history, there are no protocols and no plan'. Others were more critical, however, describing the 'lack of information' as 'overwhelming', 'unjust', and that they felt left to 'sort it all out by myself'. A first year Education student expressed her frustration:

> *I have not heard from supervisors and the university only sends out general information saying they understand the impact and how we may feel, but nothing about what to do about it.*

More positively, a further two-fifths of those providing text responses described the advice and guidance offered by their supervisors. This included pastoral support, assistance with modified research designs and ethics applications, and enquires within the university and to funders in relation to progression expectations, extensions and financial support. Frequently supervisors advised students unable to begin or continue with data collection to focus their time in the lockdown on other tasks: notably, developing literature reviews or writing up analysis on data previously collected. Such advice was, however, most applicable for early and late stage students – those at the midpoint of their PhD were less confident that these approaches would be fruitful in the longer term. One-tenth of students related that they were in regular communication with their supervisor, but that advice to date had been frustratingly vague. Some 37 students reported being told to 'wait and see': to 'sit tight and see what happens… before moving to plan c!'. At the time of survey references to support from elsewhere in the university, such as the department or faculty level or through a Graduate School, were extremely limited. Only six students referred to have received information and advice from their PhD funder at the time of the survey.

4.5 LIVELIHOOD

Table 4.5.1, below, illustrates the range of funding sources supporting the doctoral students in our sample. The largest single source of funding – for around one-third of the sample – came in the form of research council scholarships. Around one-quarter are supported by institutional scholarships. Some 15.0% of the sample reported self-funding their doctorate, while around 5.0% had taken a government doctoral loan (open to UK and EU students only). Some 6.7% were supported by an overseas government scholarship.

Source of funding	%
Research Council scholarship	31.8
University scholarship	23.9
Overseas government scholarship	6.7
Other scholarship	9.8
Employer	3.0
Doctoral loan	4.9
Self-funded	15.0
Previously funded, now self-funded (writing up)	4.9

Table 4.5.1. Source of doctoral funding. n=673.

Just over half of respondents stated that they had undertaken paid employment alongside doctoral study prior to the pandemic (51.6%). As might be expected, the proportions undertaking additional paid employment varied considerably by funding source. For example, some 85.0% of those holding a doctoral loan reported additional paid employment – in contrast to just 37.4% of those in receipt of a research council scholarship. The differing extent to which doctoral students rely upon additional income from employment is significant, since many students reported that the pandemic had considerably disrupted this income stream. From this, we can conclude that financial impact of the pandemic has not been experienced by doctoral students.

Of those reporting that they undertook paid employment prior to the pandemic, just under half stated that their employment had ceased when the lockdown came into force (45.6%). Most commonly, this was due to the workplace being closed at the time of the survey (53.3%), although a minority (11.5%) reported having had their employment contract terminated. Table 4.5.2, overleaf, details the types of employment doctoral students were engaged in prior to the pandemic, and the percentage still employed in this role at the time of the survey. It is apparent that regardless of the type of employment, only around half of students had continued in their role during the lockdown. The exception to this is those employed as research assistants by their university – some two-thirds reported continuing in this role, though the numbers are far smaller than for all other sources of employment.

Source of employment	Pre-Covid	At time of survey
Graduate Teaching Assistant	44.8	22.7
Research assistant	12.6	8.0
Other role on campus	25.3	13.8
Role outside of campus	42.8	21.3

Table 4.5.2. Source of doctoral employment, pre and post Covid (%). n=348.

Consistent to the scale of paid employment disruption reported by doctoral students, some 38.1% stated that the pandemic had negatively impacted on their finances. Given the differences between doctoral funding sources and reliance on paid employment, it is unsurprising to observe that the financial hardship generated by the pandemic has not been experienced equally among doctoral students (table 4.5.3). Scholarship holders are among are the least affected; whereas loan, self-funded and writing up students reported the highest rate of impact.

Source of funding	%
Research Council scholarship	32.4
University scholarship	33.5
Overseas government scholarship	40.0
Other scholarship	25.8
Employer	15.0
Doctoral loan	75.8
Self-funded	47.5
Previously funded, now self-funded (writing up)	66.7

Table 4.5.3. Percentage of students reporting an adverse effect to finances, by doctoral funding source. n=672.

Those balancing doctoral study with paid employment reported the highest financial impact of the pandemic. Some two-thirds of those relying on paid employment stated that their finances had been negatively affected by the pandemic (compared to just one-fifth of those not undertaking paid employment). This perceived financial impact did not, however, differ particularly by the role or type of employment. Put simply, whether doctoral students were previously employed within or beyond the higher education sector, the financial effects of Covid-19 were similarly felt.

Despite the early timing of the survey, around one-third of respondents related that their institution had already introduced measures to ease the financial pressures associated with lockdown. Most frequently, this involved the establishment of a hardship fund for students (32.4%). Around one-tenth of students respectively reported the introduction of emergency grants, accommodation fee discounts or reimbursements, or the protection of casual employment contracts. One quarter of students said that their institutions had cancelled library fines. Nevertheless, collectively these measures were considered by many to be insufficient. Some 44.3% of doctoral students stated that they were very dissatisfied or dissatisfied with the financial support measures put in place by their institution; while only 13.5% stated that they were very satisfied or satisfied.

4.6 PRODUCTIVITY AND WELLBEING

The vast majority of respondents reported that the pandemic and lockdown had negatively impacted their capacity to work productively (86.8%). A similarly high proportion related that their wellbeing had been deleteriously impacted (82.7%). Just over one-third of the sample expected that their completion date would be delayed because of the pandemic (38.8%).

The perceived impact of the pandemic on productivity, wellbeing and expected doctoral completion varied by respondents' demographic and academic characteristics. In terms of productivity, second year doctoral researchers reported the highest rate of disruption (90.8% stated that their productivity had declined due to the pandemic). International researchers from countries outside the EU reported significantly higher disruption to their productivity than researchers of all other domiciles (91.9%, compared to 87.1% of home students, and 79.2% of EU students; p=0.026). Female respondents reported significantly higher disruption to their productivity than their male counterparts (89.6% compared to 78.3%; p=0.002). This difference is not explained by the varying caring responsibilities of male and female researchers.

Perhaps unsurprisingly, the higher the disruption to productivity, the lower the wellbeing reported by respondents. Researchers in their fourth year of a full-time doctorate, for example, reported the least productivity disruption of all years, and the least impact on their well-being. Compared to other domicile groups, international students from countries outside of the EU reported the highest impact on their wellbeing (84.5% stated that their wellbeing had been adversely affected). Female respondents again reported a significantly higher impact on their wellbeing than males; and, once again, this difference is not underpinned by variance in caring responsibilities (86.0% of females reported an impact on their wellbeing, compared to 71.4% males; p=0.000).

Qualitative responses yield a more detailed insight into the experiences of respondents reporting reduced wellbeing following the pandemic. Prominent themes here included: references to poor mental health (whether caused by the pandemic or amplified by it), references to isolation and the impact it had (on individuals, couples or family households – as all experienced different forms of isolation), and the specific wellbeing challenges experienced by international students.

It should be noted that in some of the cases referring to poor mental health, respondents mentioned if their mental health issues preceded the pandemic. In cases of pre-existing mental health issues – which are comparatively highly reported the doctoral population (Mackie & Bates, 2019) – the pandemic had clearly amplified the intensity of these. As for severity, references to poor mental health ranged from *'increased stress' to 'the crisis has made me more anxious, compounded by feelings of guilt, low self-esteem and lack of concentration'.*

International researchers experiencing reduced wellbeing faced the added complication of being in another country and far from family and friends during such a difficult time. References to isolation were notably more frequent among international respondents answering the wellbeing question. However, those who had left the UK and reunited with family were not necessarily finding the pandemic easier to navigate. As this first year physical sciences student, enrolled at a post-1992 institution, explained:

> I'm genuinely upset about (...) to be forced to leave the university in the UK and travel home. I also do not like the uncertainty of not knowing when I can return.

While a link between productivity and wellbeing emerged from the survey data, the association between productivity, wellbeing and a delayed completion date was somewhat more complex.

Despite the significant differences in productivity and wellbeing reported by male and female respondents, they did not relate significantly differently responses in terms of their expected completion date. Similarly, almost half of part-time doctoral researchers expected that their completion date would be delayed by the pandemic – compared to just over one-third of full-time doctoral researchers – but they reported less impact on their productivity and well-being than full-time researchers. From this, we might hypothesise that part-time researchers were more prepared than full-time researchers for the flexible working and multitasking necessitated by the early weeks of the pandemic. Nevertheless, the lack of association between productivity, wellbeing and a delay to completion suggests that those struggling with work and wellbeing at the time of the survey were absorbed with more immediate and short-term concerns; and not that they were focusing on the longer-term impact of the pandemic on completing their doctorate. Put simply, the prospect of a delayed award is not obviously a driver of lower motivation, productivity and wellbeing among doctoral researchers.

5.Conclusions and Recommendations

The Covid-19 pandemic has clearly brought many new challenges for the doctoral researchers. While some doctoral researchers have now been able to return to laboratories, campus offices and libraries, following the partial easement of the lockdown since May 2020, many continue to work from home, with their research, professional and personal lives continuously affected.

Our current analysis provides early evidence that can be used to develop a proactive approach to alleviate the pressures on doctoral researchers during the ongoing crisis, and in anticipation of future consequences. Our ongoing collaboration will examine those medium and long-term ramifications of the early lockdown as well as the impact of evolving issues. In doing so, our work will continue to identify factors that affect doctoral researchers, which may guide institutions to develop and implement policies to support them.

The recommendations below are directed at different groups of stakeholders - as reported by the respondents, the responses from the sector and the funders early on during the pandemic have often been inadequate or delayed. During the second period of lockdown measures including stay-at-home orders and restrictions on movement in parts of the UK (21 October in Ireland, 23 October in Wales, 5 November 2020 in England), universities remain exempt for the most part, with permission to continue research activities on campus. Notably, however, staff are encouraged to work from home wherever possible, and access to office space and laboratories remains somewhat restricted. We argue that concentrated efforts are required to support doctoral researchers both now and in the future, not least to protect their productivity, livelihoods and wellbeing, and future careers. Below, we identify a few key recommendations which stem from our findings. Some of these are inexpensive and can be implemented quickly, while others require a more significant outlay, more planning and are longer term.

Our Recommendations for Supervisors

- To combat feelings of isolation amongst supervisees, group supervision meetings, as well as informal 'coffee morning' events, reading groups and co-writing sessions organised by research group or centre, held at different times or on different days to ensure that a variety of schedules and time zones are catered for, could be set up. Some of these activities would not necessarily need to involve supervisors, but to connect staff with doctoral researchers would perhaps be considered a positive if time could be set aside for this purpose. Any staff time allocated to such activities should be acknowledged by senior management in recognition of the impact this may have on the already heavy workloads.
- To ensure that any impact on data collection and/or changes to research design are taken into account in future examination of doctoral research, these should be documented in supervision notes. A record of government restrictions and university closure times and individual impacts on supervisees, for example, the dates between which their children were homeschooled, should also be noted and, where relevant, included in the progression documentation, applications for extensions and in the doctoral thesis.

Our Recommendations for Programme Leaders and Directors of Graduate Schools

- To ensure that doctoral researchers are aware of any new processes, policies or restrictions, but also, that they are aware of support put in place by the university, regular, relevant and targeted communication through agreed channels should be established, both at the departmental/faculty level and at higher graduate school and/or university level.
- To support continued professional development of doctoral researchers, move training and careers support online where possible. Further, continue providing financial support for conference attendance, for those online events which charge participation fees. It is also advisable that doctoral researchers receive training on how to make the most of the online events, both in terms of building their academic profile and networking/building of relationships.
- To ensure that any impact on data collection and/or changes to research design, as well as impact of the pandemic and related government restrictions and university closures are taken into account by those examining the progress of work and the final thesis, amend where necessary processes, policies and guidelines on both progression and examination, and communicate this to doctoral researchers, supervisors and examiners as soon as possible. In addition, monitor how the ‘knowledge production/contribution’ of a Ph.D. might be evolving in light of the pandemic, keeping an eye on how this is playing out across discipline/ research areas, and amending processes, policies and guidelines accordingly.

Our Recommendation for University Administration

- To ensure that all doctoral researchers can continue their work from home where access to campus is restricted, offer access to equipment/software/office furniture, either by implementing a loan system, or in the form of dedicated, easy to access financial support.
- To support those without appropriate study space at home, and in view of the reduced capacity of usual office/study space available to doctoral researchers, provide a system for booking of additional study spaces on campus (e.g. by making available the currently underused lecture and seminar rooms).
- To address the poor mental health and wellbeing among doctoral researchers, increase the counselling and mental health and wellbeing provision, including an online version of this where possible.
- In acknowledgement of the ongoing financial hardship caused by the local and national lockdowns and related loss or reduction of paid work, ensure access to emergency and hardship funding for doctoral researchers, including those in the writing up and examination period of their studies.

Our Recommendations for Funders

In November 2020, the UK Research and Innovation has published an updated policy on extensions to funding provided to doctoral researchers across around 100 research organisations (UKRI, 2020b). It has committed further £19mln to support extensions on a needy-priority basis, rather than under a blanket approach for all UKRI-funded doctoral researchers. While this does not go as far as some representative bodies for doctoral researchers groups have called for (see, for example, Graduate Union at the University of Cambridge, 2020) this support will be available to many of 'those who are unable to mitigate delays of COVID-19 or adjust their projects' (UKRI, 2020b). In addition to this extended support to UKRI-funder researchers, we recommend that:

- Gap funding is made available for those forced to take a leave of absence/temporary withdrawal due to childcare or other caring responsibilities should schools and other provisions become unavailable again - both for those in receipt of UKRI and institutional scholarships, and those in receipt of doctoral loans.
- Extensions of doctoral loans are offered in line with the extensions to scholarship funded programmes.

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