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24 **Abstract**

25 There is growing concern in Higher Education around job security, work-life
26 balance and inequalities, and early career academics must make difficult
27 trade-offs and life choices. Ample literature confirms that women
28 navigating academia face additional challenges. Few studies have sought
29 to connect contractual circumstances, employment priorities and their
30 impacts on the life choices of individual academics. We report results from
31 a survey exploring the experiences of 48 Early Career Researchers
32 traversing the academic ladder in geomorphology and earth/environmental
33 science and contextualise these findings by drawing on personal
34 experiences and wider literature. Overall, we find evidence of multi-
35 directional pressures that have materially negative effects on life choices,
36 including concern amongst men and women that academic employment is
37 a barrier to living where and with whom one may want to. The scale of
38 precarity amongst survey respondents is stark in terms of years on fixed-
39 term contracts (maximum 10), individual contracts held (maximum 14) and
40 number of different institutions (maximum 6). Overall, women respondents
41 opted to spend fewer years on precarious contracts, which will amplify the
42 leaky pipeline and gender gaps at more senior levels. We also find that
43 women put somewhat more emphasis on job security when applying for
44 academic posts. Perceived institutional prestige was a low priority for the
45 majority of respondents. We also find notable divergences between career
46 advice given by more senior colleagues and the priorities of those seeking
47 guidance. Our results furthermore infer that men were generally more

48 satisfied by financial aspects of university employment. Drawing on input
49 from survey respondents, we put forward a set of recommendations under
50 four themes: improving policies on parental leave and flexible working;
51 formalising and improving mentorship; transparency on pay and
52 promotion; more considerate recruitment procedures. We believe these
53 recommendations are within the scope of action by departments,
54 laboratories and research groups.

55

56 **Keywords:** academia, academic progression, early career,
57 geomorphology, women

58

59 **1. INTRODUCTION**

60 Grappling with uncertainty has seemingly become an essential criterion
61 when choosing an academic occupation, especially during the early career
62 stages. Concerns around precarity and working conditions in higher
63 education have intensified prior to and through the COVID-19 pandemic
64 (UCU, 2020; OECD, 2021). After earning a PhD, short-term contracts are
65 commonplace, ostensibly to build experience and publication records to
66 make oneself competitive for open-ended contracts. This is a function of a
67 highly competitive and saturated job market (Etmanski et al., 2017).
68 Furthermore, an increasing number of short-term teaching-focused
69 positions are being advertised (certainly in the UK), as a response to
70 growing student numbers in universities. This type of contract reduces
71 research-related time, making it more difficult to align with the “publish or

72 perish" narrative (Forrester, 2021). A career path outside of academia is
73 seen as less desirable by some, with doctorates finding it difficult to know
74 how to market their skillsets (Powell, 2018).

75

76 Nerad and Cerny (1999) and Bazeley (2003) recommended universities
77 take steps to create more stable working conditions to improve the
78 experience of Early Career Researchers (ECR) almost 20 years ago. Whilst
79 some improvements may have been made, work pressures continue to
80 cause deep-rooted concern amongst ECRs (Woolston, 2019). Traversing an
81 academic career undoubtedly brings benefits for some (e.g. living and
82 working in different locations; flexibility and challenges in academic
83 endeavour), for others this insecurity and transient employment can lead
84 to stress, decline in mental wellbeing and difficulties with personal
85 circumstances and making life decisions (Dorenkamp and Weiß, 2018;
86 Ekine, 2018; Mudrak et al., 2018). A special issue on 'ECRs and Changing
87 working conditions in academia' in the journal Higher Education Policy
88 (Wöhler, 2014) provides a number of in-depth articles on the general
89 challenges that ECRs face, covering topics such as work-life balance,
90 stability, mobility, supervision and publishing.

91

92 The term ECR is used widely in the literature and generally refers to a
93 person at the beginning of their academic career, although there is no
94 single definition. UK Research Councils and funding bodies as well as
95 learned societies (such as the European Geosciences Union and American

96 Geophysical Union) tend to define an ECR in terms of length of time since
97 completion of a doctorate, with a range extending from 3 to 10 years and
98 the most common timescale being 5 years post-PhD. Extenuating
99 circumstances that lengthens this period may be given to those who have
100 taken a career break due to illness or parental/caregiving duties (Akram
101 and Pflaeger Young, 2021). Length of employment is a common
102 categorisation for ECR, but Laudel and Glaser (2008) consider time in
103 employment an imprecise measure, since increasing casualisation has seen
104 a growth in casual teaching only appointments or short-term research
105 positions funded through grant money. Bazeley (2003) also found that
106 academics who self-defined as ECR commonly did so on the basis that they
107 lacked experience, competence and/or confidence to undertake
108 independent projects or that they had not yet completed or only recently
109 completed their PhD.

110

111 The challenges of being a woman in academia have also been widely
112 discussed in the literature (Bono et al., 2019; Casad et al., 2020; Huang et
113 al., 2020) and often intersect with other aspects of identity including racial
114 diversity, sexuality, disability and class (Dowey et al., 2021). The tendency
115 for women to leave academia prematurely is well-established (Gasser and
116 Shaffer, 2014), sometimes described as the 'leaky pipeline'. There are a
117 multitude of factors at play (see Huang et al., 2020), including barriers to
118 equal research recognition (Witteman et al., 2019) and promotion (Baker,
119 2010). Gender bias is also rife in the delivery of education in academia,

120 with ample literature highlighting that ECR women are perceived as less
121 experienced and less of an authority on their subject matter, which is
122 reflected in poorer student evaluation scores for women (e.g. Mengel et al.,
123 2017).

124

125 Looking specifically at the earth and environmental sciences, the same
126 challenges and benefits exist (Tooth and Viles, 2021). These fields have a
127 historical masculine legacy and dominance (Bono et al., 2019), with science
128 subjects often viewed as tough, competitive and impersonal. Marín-Spiotta
129 et al. (2020) describe the gendered nature of the geosciences (mostly from
130 a US perspective), notably highlighting a general lack of diversity and
131 hostile environments faced by under-represented groups. Field and
132 laboratory work, which are often critical components of an academic career
133 in earth and environmental sciences, present specific challenges from a
134 gendered perspective welcoming and normalising the able-bodied (Jokinen
135 and Caretta, 2016; Greene et al., 2021).

136

137 In this paper, we aim to provide a balanced analysis of the experiences of
138 early career academics who currently or have previously classified
139 themselves as geomorphologists, environmental scientists and
140 geoscientists, focusing on the post-PhD experience. For the purposes of this
141 work, and drawing on the definitions of ECRs discussed above, we have
142 defined an ECR as an individual within 10 years of being awarded their
143 doctorate. This should encapsulate most existing classifications of ECRs and

144 ensure we capture those who may have taken extended periods of time out
145 from their direct career development. Many of those working in, or closely
146 with, academia will be familiar with personal or anecdotal evidence about
147 career progression in this discipline, but there have been few studies of
148 academic career experiences that integrate personal and external data to
149 evaluate this in more detail. Drawing on a mixed-methods approach using
150 textual and graphical analysis of survey data and our own personal
151 experiences, we explore the challenges and merits of the academic career
152 trajectory. Our specific objectives are:

- 153 • Identify the challenges and benefits of being an ECR with a focus on
154 those working in environmental and geo-sciences;
- 155 • Evaluate the current situation faced by ECRs and explore the ways in
156 which employment prospects and realities influence individuals' life
157 plans, goals and choices;
- 158 • Analyse to what extent and in which ways being a woman in the
159 environmental and geosciences intensifies or exacerbates those
160 challenges and opportunities;
- 161 • Put forward a set of recommendations for improvement ,relevant and
162 actionable by fellow earth and environmental scientists.

163

164 To provide context for the discussion, the authors must acknowledge their
165 identity and personal experiences to recognise any unconscious bias. The
166 authors are all white and cis-gender, identifying as three females and one
167 male. They studied for undergraduate and postgraduate degrees (Master's

168 and PhD) in the earth and environmental sciences fields at primarily UK
169 institutions. Two of the authors are currently on temporary contracts and
170 two are on permanent contracts. All authors have undertaken multiple
171 temporary, short-term contracts post-PhD. In accordance with our ECR
172 definition of 10 years post-PhD, three authors are classified as an ECR and
173 the other no longer sits in this category. One author has a child, has
174 experience of taking a period of parental leave during a fixed-term contract
175 and at the time of writing is preparing to take another period of leave with
176 a second child. The authors recognise that they have a specific set of
177 privileges and experiences, which people with other intersectional identities
178 may not. The survey data in this study should assist in providing a more
179 balanced analysis of intersectionality, but it will be by no means exhaustive.

180

181

182 **2. METHODOLOGY AND METHODS**

183 We applied a dual approach to gather information about the thoughts,
184 feelings and experiences that ECRs have regarding the benefits and
185 challenges of continuing with a career in academia after earning a
186 doctorate. We drew on our own experiences and supplemented this with an
187 extended survey (approximately 30 minutes) which was designed by the
188 authors and given ethical approval by King's College London. The survey
189 was posted on Microsoft Office Forms and advertised by the authors
190 through their networks, including relevant Learned Societies, email lists
191 and Twitter. The survey was open to earth and environmental scientists

192 who had completed their PhD in the last 10 years and then went on to be
193 employed in a substantive role at a university for some or all of those years
194 (i.e., as a minimum held a contract for 6 months or longer, either fixed
195 term or permanent/open-ended). We encouraged participation from both
196 those who continued working in universities in any role (professional
197 services, research, teaching, technical, laboratory-based) after this initial
198 employment as well as those who have since left to pursue a career outside
199 of universities.

200

201 The survey consisted of 55 questions, comprising a mix of Likert-scale and
202 open-ended types that encouraged free-flowing comments. The survey
203 covered the following sections: background information, information about
204 the respondents' academic career, their experiences of being an ECR, the
205 day-to-day job demands and expectations and the job application process.
206 A final section asked respondents to comment on the benefits and
207 challenges of being an ECR, and in particular how these impact women,
208 and to outline what actions they would recommend could be taken at an
209 'immediately actionable level (i.e., as individuals, research groups,
210 departments)' to better support women working in academia. The
211 questionnaire was structured with branching to enable additional and
212 targeted questions for those who have left academia for their reasons
213 behind the career change.

214

215 Quantitative analysis was performed on the Likert-scale questions and the
216 open-ended questions were assessed for key trends using word clouds and
217 coded using axial (thematic) coding as defined by Wicks (2012). For all
218 questions the trends were evaluated across all responses and then
219 disaggregated by gender and other key characteristics (i.e., career stage,
220 country etc).

221

222

223 **3. MAIN FINDINGS**

224 **3.1 Who and what is an ECR?**

225 Given the variation in the definition of what constitutes an ECR we asked
226 respondents whether they considered themselves to be an ECR within the
227 timeframe that we set (i.e., 10 years from PhD award). 16.7% of
228 respondents felt that they no longer classified themselves as an ECR; all of
229 these were respondents from the UK, had completed their PhD over 5 years
230 prior and 50% had since left academia. The most common definition of an
231 ECR is 5 years employment post-PhD but of our respondents who were 5-
232 6 years post-PhD 88.9% of this group still considered themselves as an
233 ECR, with 50% of those with 7+ years of experience also self-identifying as
234 ECR. Interestingly, all female respondents with 5-6 years post-PhD felt that
235 they were still ECR, but half of those identifying as non-ECR in the 7+ years
236 group of respondents were female. This highlights the complicated and
237 individualistic nature of academic career progression, and aligns with the
238 findings of Bazeley (2003) that personal experience and confidence is

239 important when self-defining career stage. As suggested by Bosanquet et
240 al. (2016) when defining ECR it may be more appropriate to combine
241 objective measures (such as doctoral candidature or completion, length of
242 university employment, and/or research output) with subjective indicators
243 to acknowledge the complex and conditional nature of entering academia.

244

245 **3.2 General survey**

246 We received 48 complete responses to the survey, comprising 32 women,
247 14 men and two who preferred not to say. Respondents show an even
248 spread across years since completion (Table 1), with most falling in the age
249 range 30-39. In terms of contractual status, 25 respondents hold a fixed-
250 term contract and 13 have a secure, permanent post. We note a mixture
251 of terminology is used across UK HE to denote “permanent” contracts;
252 “open-ended” or “indefinite” are also common. Ten respondents now work
253 outside academia but held at least one substantive university role since
254 PhD completion.

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263 **Table 1.** Survey respondent demographics

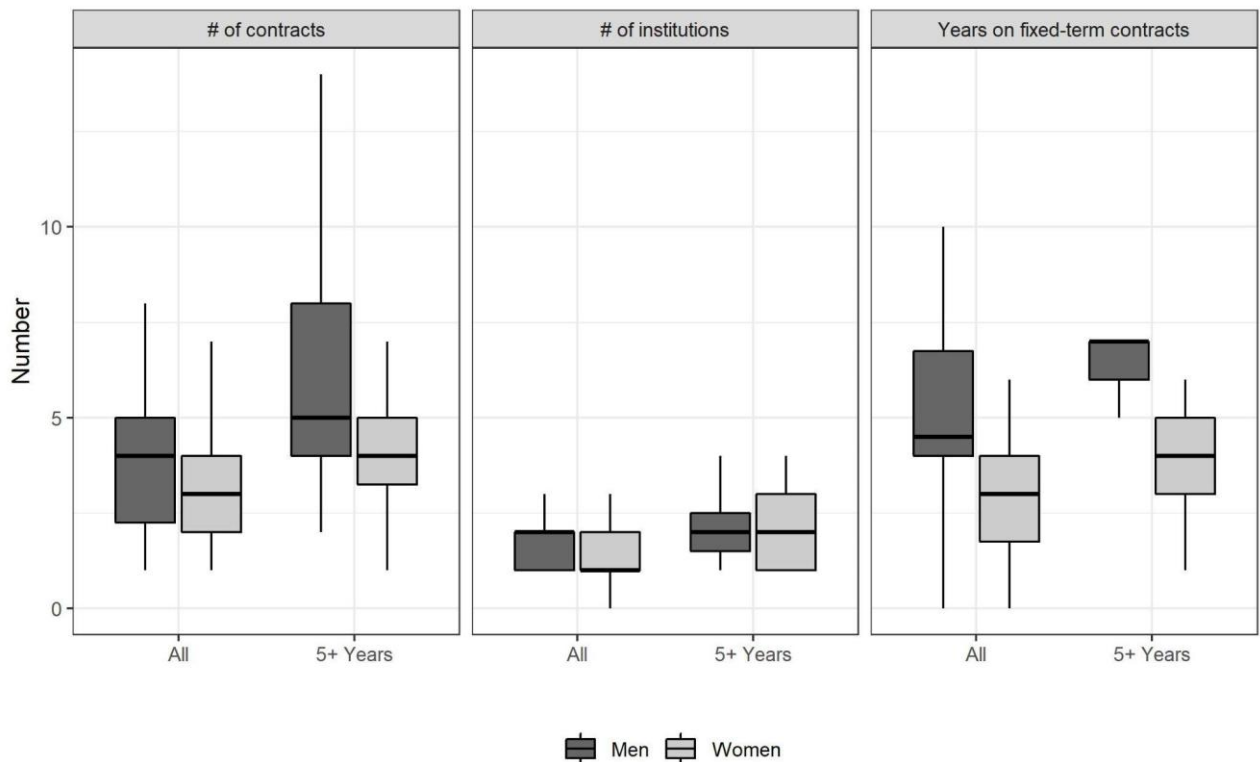
Respondent age		Years since PhD completion	
Age range	Number of responses	Years	Number of responses
20-29	6	1-2	11
30-39	39	3-4	14
40-49	2	5-6	9
50-59	1	7-8	6
60 or older	0	9-10	8

264

265 **3.3 Contractual status**

266 On average, respondents spend just under four years on fixed-term
 267 contracts (median = 3.5), often across multiple institutions (Table 2; Figure
 268 1). This masks the reality that ECRs can spend up to ten years on numerous
 269 (max = 14) separate fixed-term contracts. All three metrics plotted in
 270 Figure 1 showed divergence between women and men, with women holding
 271 fewer contracts and for shorter periods of time in total. Wilcoxon tests show
 272 a significant difference ($p < 0.05$) between the number of years women
 273 and men spend as fixed-term employees (number of contracts and number
 274 of institutions are non-significant). These values will be influenced by
 275 respondents who have completed their PhDs more recently so we
 276 recalculated for respondents at least five years since PhD award. This
 277 confirms ($p < 0.01$) a tendency for men to spend more years than women
 278 on fixed-term contracts (Theall and Franklin, 2001). These findings infer
 279 that, overall, women are less keen on traversing an ECR pathway that is
 280 rooted in protracted precarity. There are many plausible reasons for this,

281 not least that – from our experience – moving is a non-trivial undertaking,
282 especially when a life partner or family must be accommodated.



283 **Figure 1.** A summary of the contractual circumstances for survey respondents,
284 disaggregated by gender. Because the values for 'All' will be influenced by
285 respondents who have been awarded their PhDs recently, we recomputed each
286 plot for respondents who are at least five years since PhD award.
287
288

289 To explore the prevalence of short-term contracts for ECRs in further detail,
290 the responses were disaggregated based on the respondents' time in
291 academia (Table 2). Reported duration of short-term contracts varied from
292 7 months to 5 years, and even in the first couple of years of an academic
293 career some ECRs had already held five short term contracts (Table 2).
294 Those having had a longer academic career since their PhD had moved
295 institutions more often and had spent a significant portion of their career
296 on short-term contracts. Only 30% of respondents had stayed at the same
297 institution, illustrating that moving is a necessity for the majority of ECRs.

298 Of those based in the UK, 35% moved to a different town or city to take up
 299 their first university post after their PhD award, 19% moved to a different
 300 country and only 14% moved institution but not their primary address. This
 301 compares to ECRs currently based in other countries (i.e., not currently
 302 working in the UK) where 42% moved to a different town or city post-PhD,
 303 33% moved to a different country and none recorded having moved
 304 institutions without relocating. The respondents who had left academia
 305 corresponded with those holding the highest number of short-term
 306 contracts, highlighting the impact that job insecurity can have on retention
 307 rates of ECRs. The contractual status of our survey respondents re-affirms
 308 the scale of precarity amongst ECRs in UK Higher Education.

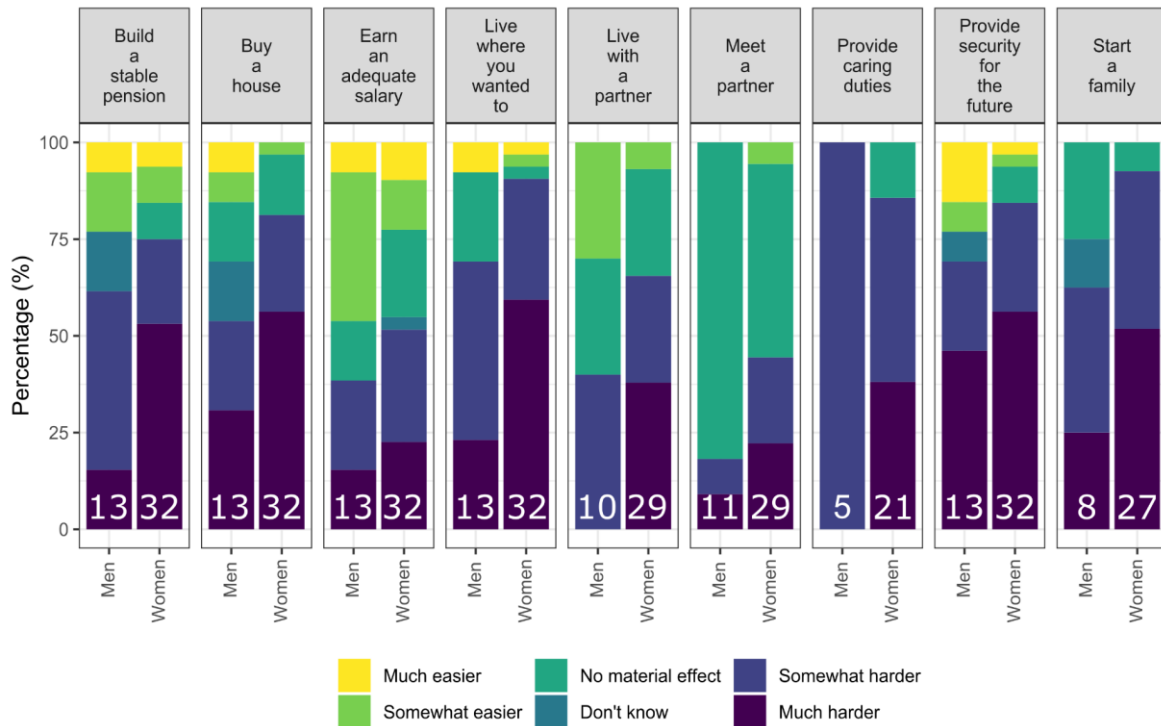
309 **Table 2.** Contractual circumstances for survey respondents disaggregated by time
 310 in academia.

Time in academia	Number of fixed-term contracts held			Total number of years on fixed-term contracts			Number of different institutions		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
1-2 years	2.5	1	5	1.3	<1	2	1.1	1	2
3-4 years	2.9	1	5	3	<1	4	1.7	1	4
5-6 years	6.1	1	14	4.7	1	6	2.1	1	4
7-8 years	3	2	4	4.2	2.5	6	2.3	1	4
9-10 years	5.3	2	8	6.1	3	10	2.6	1	6

311

312 **3.4 Experience of being an Early Career Researcher**

313 ECRs consider their work at universities to be detrimental to many key life
314 stages (Figure 2). Women and men considered their ECR roles to have
315 made it particularly hard to live where they wanted to, to provide security
316 for the future and start a family. Although each question received overall
317 negative responses, there were some notable gender differentials. Women
318 were notably more concerned by factors linked to their personal life, such
319 as meeting and living with a partner, starting a family and living where they
320 want to. Men were somewhat more positive than women about financial
321 considerations, including salary, pensions and future security. It is
322 important to consider the uneven gender distribution of respondents to this
323 survey as a factor in this analysis, in addition to the notion that women are
324 more likely to respond to surveys, especially on topics of particular concern
325 (Smith, 2008). Nevertheless, the challenges posed by ECR employment are
326 clear and seemingly of greater concern to women, which is mirrored by a
327 wide literature (Bono et al., 2019; Webster and Caretta, 2019).



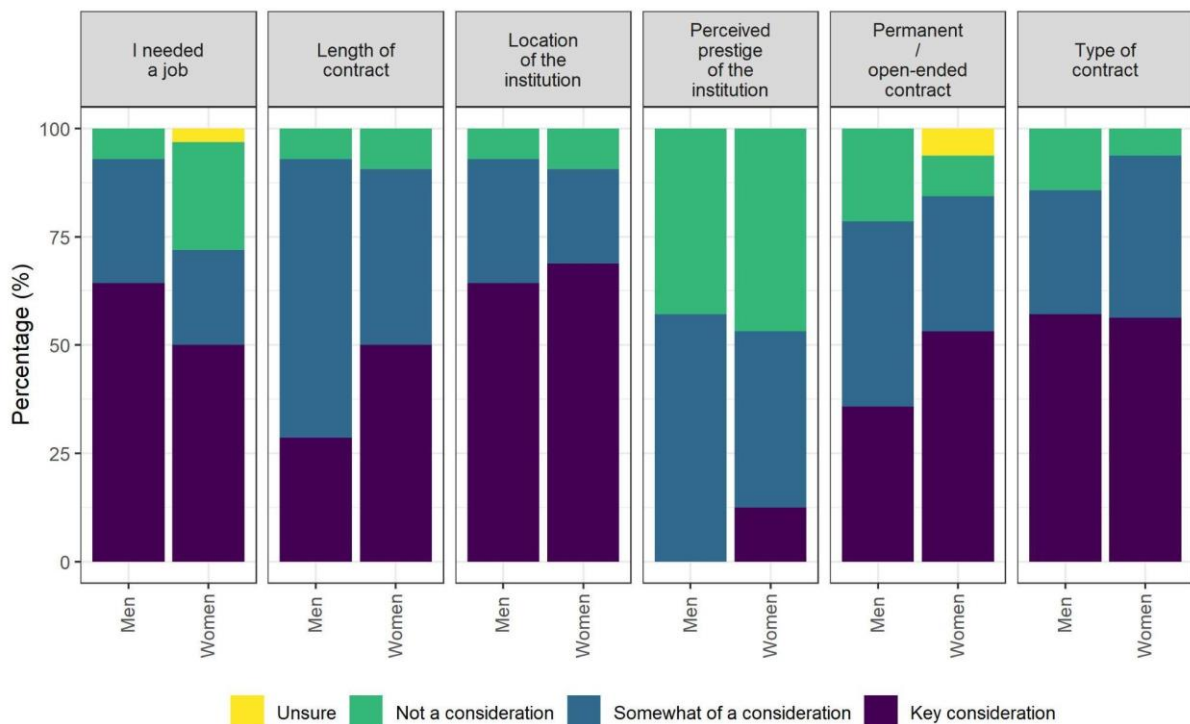
328
 329 **Figure 2.** Responses to Likert-scale questions on life experiences as an Early
 330 Career Researcher (ECR). White numerals at the base of each bar denote the total
 331 number of responses to that question.

332

333 3.5 The job application process

334 The precarity of ECR employment leads to a tough balancing act between
 335 delivering outputs attractive to future employers and spending time
 336 completing job applications. From our experience, preparing and submitting
 337 each academic job application can take up to two days, plus more time to
 338 prepare for a presentation and interview, if short-listed. We wanted to
 339 explore what drives ECRs to apply for a particular position. Location of the
 340 target institution appears to be the priority for women and men (Figure 3),
 341 even ahead of contract length, type of role and potential to secure a
 342 permanent (open-ended) post. At the same time, 50% of women and even
 343 more men were essentially willing to apply for any academic position that

344 they were eligible for. Our data suggest that women prioritised potential
 345 job security more than men, with “length of contract” and
 346 “permanent/open-ended contract” being key considerations for around
 347 50% of women compared to 25-30% of men.
 348



349 **Figure 3.** Summary of respondents’ priorities when they last applied for a role at
 350 a university. Examples of ‘Type of contract’ include Teaching-focused, Research-
 351 focused, Teaching & Research or a technical role.
 352

353
 354 Most surprising to us was the unimportance of prestige (Figure 3).
 355 Perceived prestige is pervasive in academia: particular (groups of)
 356 institutions, publishing in specific journals, and securing large research
 357 grants seem to carry huge weight (Sutherland, 2017; Merga and Mason,
 358 2021; Raja and Dunne, 2021). We interpret this as evidence that ECRs are
 359 putting more emphasis on work-life balance and that ECR priorities

360 continue to shift away from the established view of what constitutes and
361 how to forge a successful career in academia, which usually involves
362 judgement against a set of performative metrics (Sutherland, 2017). A
363 follow-up question revealed more starkly the continued mismatch between
364 ECR priorities and the career advice given by more senior colleagues. When
365 asked whether they had received advice from a colleague on the impact of
366 continuing to work at the same institution, 25 respondents indicated they
367 had and 88% of this advice was negative (Table 3). Moving is difficult (Bono
368 et al., 2019) yet there is a conflict with the perception in academia that you
369 need to move institution or indeed country to develop a strong career
370 (Teichler, 2015; Bono et al., 2019). This contradiction was further
371 magnified by 41% of respondents believing that holding a fixed-term
372 contract had or will positively influence the likelihood of securing a
373 permanent post at the same institution, a view shared by the authors.
374 Respondents also received predominantly (73%) negative advice when
375 applying for roles that don't fit this conventional view of 'success', including
376 lectureships at non-Russell Group institutions¹, technical or professional
377 services roles or teaching-focused posts. Academia needs to move away
378 sharply from notions that there is one pathway to success, usually idealised
379 as being PhD → post-doctoral researcher → Lecturer (Teaching and
380 Research), each post held at a highly ranked university. We encourage

¹ The Russell Group is an umbrella organisation in the UK that represents a collective of 24 'research-intensive, world-class universities' <https://www.russellgroup.ac.uk/>

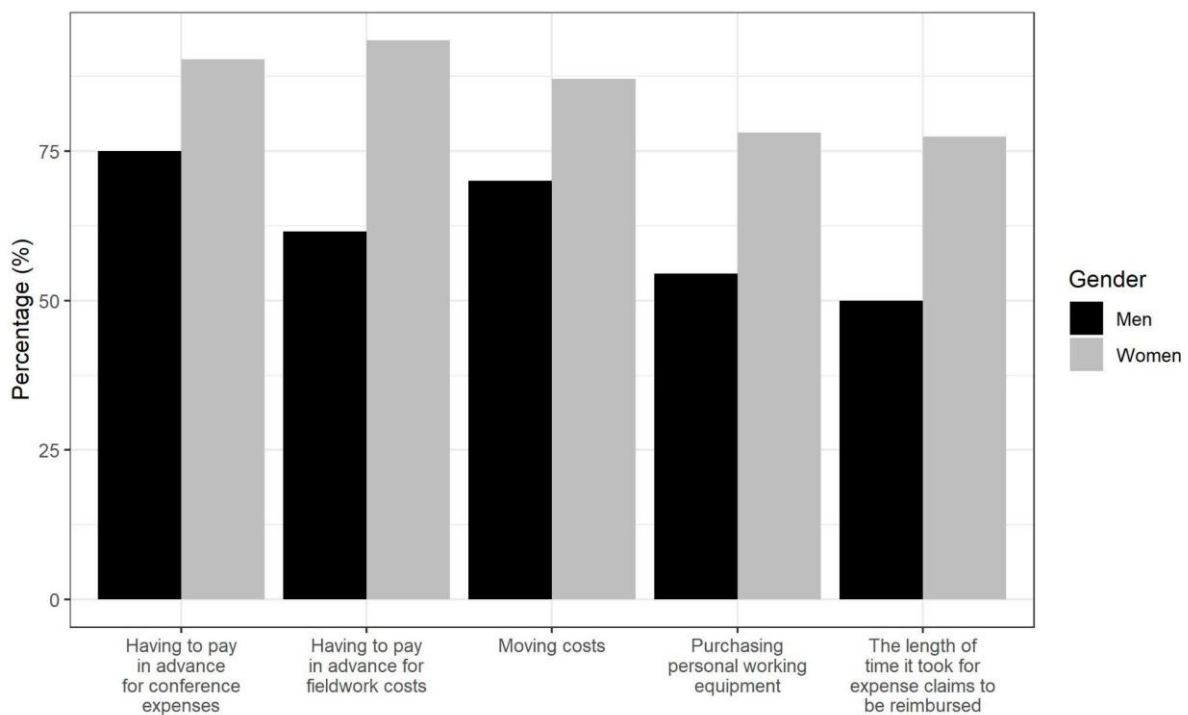
381 colleagues to keep these findings in mind when providing career advice and
382 sitting on recruitment panels.

383

384 **3.6 Financial considerations as an ECR**

385 Working at universities can require an array of financial outlays, including
386 conference attendance, fieldwork campaigns and moving costs. Some of
387 these costs may be covered by a grant, for example, but payment in
388 advance and reclaiming through an institutional expenses process is almost
389 always required. This can leave a colleague hundreds of pounds out of
390 pocket for many weeks. Moving costs will inevitably be exacerbated by
391 repeated relocations to take up multiple fixed-term contracts. One author,
392 for example, held positions at four different UK institutions in different
393 regions of the country within a six-year period. These financial
394 considerations are viewed negatively by at least 50% of all respondents
395 and especially (>75%) amongst women (Figure 4). Our previous data hints
396 that men are generally more satisfied by salary and/or have fewer financial
397 uncertainties (Figure 2). There are a number of potential explanations. This
398 difference could reflect gendered views and realities around disposable
399 income, wealth and savings (e.g. Weller and Tolson, 2020) and/or be a
400 function of the known gender pay gap in UK Higher Education (UCEA,
401 2021). Equally, women may have stronger views that conventional norms
402 in academia around finances, such as making hefty advance payments for
403 conference or field expenses and protracted waits for reimbursement are
404 unfair and/or unsustainable. We urge Principal Investigators, Heads of

405 Department and others holding line management roles to be continually
 406 aware of these concerns and, where it is necessary, colleagues in secure
 407 and usually more senior positions should take the bulk of the responsibility
 408 to pay up front and reclaim such costs. We also highlight here that more
 409 protracted fixed-term contractual circumstances creates an unwelcome
 410 feedback: ECRs will increasingly have to move to their next position with a
 411 life partner and/or family, which is more challenging and will probably
 412 increase their likelihood of ultimately leaving academia. This would worsen
 413 the leaky pipeline.



414 **Figure 4.** Percentage of respondents who hold "somewhat negative" or
 415 "extremely negative" views on a number of common financial considerations when
 416 working in academia.
 417

418

419 **3.7 Viewpoints on an academic career**

420 Respondents were asked their viewpoints on pursuing an academic career
 421 as an ECR, incorporating both the positive and negative. The key words

422 associated with the main perceived benefits are shown in Figure 5A and
423 these align with the axial coding themes for this question. The highest
424 response rates were around freedom and independence (48%: 43% of
425 these responses were from women) and the flexibility offered in an
426 academic job (48%: 70% of these responses were from women).
427 Interactions with colleagues came out as one of the key benefits (25%:
428 67% of these responses were from women), although interestingly this was
429 also listed as one of the worst elements (15%: 43% of these responses
430 were from women) with bullying and "old boys club" mentality listed as the
431 reasons behind this; highlighting the importance of a supportive work
432 environment for academics. The ability to continue learning and develop
433 skills (21%: 70% of these responses were from women), to undertake
434 research and do something beneficial (19%: 67% of these responses were
435 from women) and the variety of tasks associated with an academic career
436 (13%: 67% of these responses were from women), including teaching and
437 mentoring (15%: 86% of these responses were from women), were all seen
438 as benefits and lead to a stimulating and fulfilling career (17%: 13% of
439 these responses were from women). The pay and benefits (19%: 33% of
440 these responses were from women) and the opportunity to travel (15%:
441 86% of these responses were from women) were also highlighted. Women
442 therefore seem to appreciate the flexibility, continued professional
443 development and collegiate aspects of an academic career, as well as the
444 opportunity to undertake a variety of tasks and to travel more than the
445 male respondents.

459 workload and working extra hours (40%: 68% of these responses were
460 from women). The stress association with life as an ECR and pursuing an
461 academic career and mental health and isolation aspects of the role were
462 highlighted by 29% of respondents (39% of these responses were from
463 women), as well as the stress associated with competition for jobs and
464 funding (21%: 100% of these responses were from women). A variety of
465 themes were highlighted by 15% of respondents, including flawed metrics
466 of success (29% of these responses were from women), lack of support
467 from the university (29% of these responses were from women) and the
468 pay and benefits (86% of these responses were from women). Pay and
469 benefits was therefore another factor that was seen as both a positive and
470 negative of an academic career but the majority of those seeing it as a
471 negative were women. Imposter syndrome was also seen as one of the
472 worst elements of an academic career by 8% respondents (50% of these
473 were women). Overall, there appears to be a gender split with regards to
474 the negative aspects of an academic career; with women concerned about
475 the job security, competitiveness and workload associated with these roles
476 as well as the pay and benefits, while the male respondents commented
477 more on the stress, pressure, level of institutional support and expectations
478 of the role.

479

480 **4. RECOMMENDATIONS**

481 Drawing on the survey data and responses to an open-ended question
482 asking about priority actions, alongside our own experiences, we put
483 forward the following recommendations.

484

485 **4.1 Improved parental leave and flexible working**

486 Improving policies, attitudes and outcomes around parental leave and
487 flexible working opportunities was the most common priority, emphasised
488 by 25% of respondents. This is not a new concept. There is ample and long-
489 standing evidence of a 'motherhood penalty' (Crabb and Ekberg, 2014), for
490 example, the need to demonstrate "total commitment to work life" in an
491 academic career can often be a barrier to part-time or flexible working
492 (Cannizzo et al., 2019, p.261). UK universities have been proactive at
493 updating policies in line with legislation, for example around shared
494 parental leave (UCEA, 2016 cited in ECU 2018). Nevertheless, there is stark
495 variance in parental leave conditions across different UK universities
496 (Epifanio and Troeger, 2020) and ECRs continue to *perceive* university
497 policies around parental leave and flexible working as being insufficient
498 (Crabb and Ekberg, 2014). A research priority should be to explore the
499 back-to-work experiences and longitudinal outcomes of academics who
500 have taken parental leave under revised policies. This should encompass
501 material outcomes, such as promotions, as well as feelings of inclusion and
502 fit in academia (Probert, 2005) after a period of leave. Some recent

503 research (e.g., King et al., 2020) suggests the COVID-19 pandemic may
504 open society's eyes, especially men, to the demands of caring
505 responsibilities that have traditionally been 'invisible' (Grummell et al.,
506 2009). How this influences women's experiences of an academic career
507 should be monitored in the years ahead so that lessons can be learnt. We
508 also reiterate the need to ensure relevant policies are in place that apply to
509 colleagues on fixed-term contracts. In our experience, this manifests as
510 advisors at an institution not knowing whether or how a particular policy
511 applies to someone on a fixed-term contract, especially if the contract were
512 to expire during the period of leave.

513

514 **4.2 Formalising and improving mentorship**

515 Many respondents called for better mentorship opportunities. What
516 constitutes an academic mentor is complex (e.g. Sambunjak et al., 2010;
517 Garmire, 2021) but a growing body of literature stresses that inadequate
518 mentorship is a barrier to women progressing and thriving in an academic
519 post (Gardiner et al., 2007; Cross et al., 2019; Cardel et al., 2020; Casad
520 et al., 2020). Marín-Spiotta et al. (2020) similarly emphasise that peer-
521 mentoring networks can improve intersectional support for under-
522 represented groups. It is certainly our view that every ECR - and indeed all
523 university employees - should have a nominated individual as a mentor.
524 Anecdotally, this is not the case at all UK universities, and is an oversight
525 that ought to be rapidly rectified. A formal mentor could be a line manager
526 (e.g., Principle Investigator of a grant, Education Lead for teaching-focused

527 positions) but we see value in separating career advice from direct
528 managerial oversight. What makes an effective mentor? Seniority or
529 established research excellence doesn't inherently do so. Indeed Principle
530 Investigators as mentors may exacerbate power dynamics around co-
531 authorship of publications and other grant outputs, for example. One
532 respondent emphasised that having a mentor with a realistic sense of the
533 current realities of navigating university employment as an ECR was a
534 valued criterion. One author has a mentor from a different research domain
535 and has found this to be extremely valuable. A survey respondent
536 highlighted the importance of finding a mentor with similar views to your
537 own on what constitutes an appropriate work/life balance, regardless of
538 their respective genders. Alternatively, one may seek a mentor for
539 navigating academia more generally or identify someone well-placed to
540 support a specific process, such as a grant application to a particular
541 funding stream. Many departments could implement better communication
542 processes so ECRs can identify colleagues who may be well-informed on
543 particular grant schemes, perhaps having served as a peer reviewer or sat
544 on an awarding panel. Such information is rarely visible. Effective
545 mentorship underpins a positive and productive university culture yet is
546 rarely acknowledged in formal schemes. We are in favour of incorporating
547 mentorship as a promotion criterion and creating dedicated awards
548 schemes to recognise effective mentorship (e.g. Cardel et al., 2020). We
549 also reiterate calls in the literature (e.g. Sambunjak et al., 2010; Garmire,

550 2021) that effective mentorship can be delivered through support networks
551 and needn't be restricted to mentor-mentee pairs.

552

553 **4.3 Transparency and clarity on salaries and promotion routes**

554 In the UK, organisations with more than 250 employees - which
555 encompasses most universities - are required under recent legislation to
556 report annually on their gender pay gap. This is reported as a mean or
557 median, organisation-wide value. Granularity, for instance between or
558 within departments, is not captured and indeed the measure is not designed
559 to enable a member of staff holding a particular role to evaluate whether
560 they are being paid the same salary as another colleague in an equivalent
561 role. There was a clear wish amongst respondents for salary information to
562 be more transparent. As well as identifying persistent concerns of gendered
563 rewards and recruitment and improving work culture (Pierson et al., 2020),
564 such transparency could empower women during salary negotiations
565 (Gamage et al., 2020) and potentially aid in the retention of women in
566 academia. Increasing effort is placed on diversifying recruitment, which is
567 undoubtedly vital, but retention is arguably more problematic (e.g. Casad
568 et al., 2020) and must be considered in order to increase the appeal of an
569 institution to women seeking their next academic position.

570

571 There are also enduring concerns that, because academic promotion is
572 weighted so heavily towards one's research portfolio, gendered productivity
573 harms women's progress (Baker, 2010; Howe-Walsh and Turnbull, 2016).

574 Many steps for reform have been proposed in the literature (Schimanski
575 and Alperin, 2018; Cardel et al., 2020); we add here the need for greater
576 clarity on the invisible sides of promotion. As ECRs, we often wonder:
577 because the executive panel has limited time to evaluate each application,
578 which criterion/criteria are really prioritised by the panel? And to what
579 extent does this magnify acknowledged barriers to womens' progression?
580 Transparency would be welcomed.

581

582 There is another tension around academic progression that must be
583 navigated carefully. On the one hand, survey respondents highlighted that
584 men tend to hold more senior administrative roles in departments or
585 faculties, creating another barrier to CV development and promotion.
586 Conversely, there is ample experiential, anecdotal and published evidence
587 that women - and other under-represented groups - make
588 disproportionately high contributions to service activities in the name of
589 'diverse committee membership', leaving less time for research (e.g. Casad
590 et al., 2020).

591

592 **4.4 More considerate recruitment procedures**

593 The lack of diversity across all axes amongst university employees
594 (including but certainly not limited to gender, race or disability), especially
595 in academic and management posts, reflects prolonged systemic
596 inequalities in policies and practices in Higher Education (Dowey et al.,
597 2021; Orupabo and Mangset, 2021). Some efforts to improve recruitment,

598 such as unconscious bias training, are a useful start but have limited
599 evidence of material outcomes, and there are growing calls for more direct
600 action (Cardel et al., 2020). The recommendations outlined above are
601 intertwined here; for example, better mentorship could increase a
602 candidate's chance of success. Similarly, there is evidence that
603 comprehensive policies around parental leave and (child) care is attractive
604 to potential women applicants (Morgan et al., 2021). Survey respondents
605 broadly emphasised two courses of more direct action. First, dedicated and
606 ring-fenced recruitment streams, often termed 'positive action'. In the UK,
607 the law surrounding this approach is defined under the Equality Act 2010,
608 which "permits employers to take positive action measures to improve
609 equality for people who share a protected characteristic" (EHRC, 2011
610 p.159). We are aware of few instances of this approach at UK universities,
611 anecdotally owing to concerns around the navigating positive action rather
612 than positive discrimination, which is unlawful in the UK. The second
613 prominent request was for (gendered) anonymity on job applications
614 and/or references. Lastly, we urge departments and institutions to be
615 considerate in their use of fixed-term contracts. We acknowledge that there
616 are circumstances where fixed-term contracts are appropriate, but no one
617 wins from a trajectory of ever-increasing precarity in academia. Policies
618 should be devised that establish a minimum length for every contract and
619 illustrate clearly the opportunities for job progression at the same
620 institution. These policies should embed transparency and monitoring of
621 contract types.

622

623 **5. CONCLUSIONS**

624 We collated survey data illustrating that the pressures of working in
625 universities felt by all ECRs are intense and are perceived to have materially
626 negative effects on core life pathways and opportunities. We observed
627 gendered responses on a number of fundamental issues. We infer that
628 women are more concerned than men by financial aspects, including salary,
629 pension or house purchasing power, and 'geographical choice': living in a
630 particular place with a particular person. The data also suggested that
631 women prioritise job security, contract length and opportunities to secure
632 a permanent post more than men. We do have to keep in mind that
633 unbalanced gender responses (70% of respondents identify as women)
634 may influence our data.

635

636 We also want to draw attention to the striking disparities between the
637 ambitions and priorities of all ECRs and the career advice we receive.
638 Surprisingly, ECRs in our survey do *not* consider perceived prestige of an
639 institution to be a priority when applying for their next job. This is in stark
640 contrast to persistent advice from more senior colleagues framed in
641 precisely those terms: "working at a certain institution will have negative
642 effects on career progression because of a perceived less prestigious
643 status". We urge more senior colleagues to acknowledge and reflect
644 carefully on these findings.

645

646 An academic career continues to be enormously fulfilling for us as authors
647 and for many colleagues. But traversing the ladder is becoming trickier and
648 a number of factors are tipping the scales unfavourably. We have sought
649 to draw from quantitative and qualitative data some actions and
650 approaches that everyone in academia can take to strengthen support for
651 and improve working conditions of ECRs.

652

653

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660

661

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