

Postdocs: Who cares about their careers?

Professor Pat O'Connor¹, Professor Emeritus Sociology and Social Policy, University of Limerick and Visiting Full Professor, Geary Institute, University College Dublin

Introduction

Neoliberalism and new public management began to impact on the Irish higher educational system in the late 1990s and became embedded at different times and to varying degrees in particular Irish universities (Lynch et al, 2012; Lynch, 2015; Mercille and Murphy, 2017). With it came a focus on research, and particularly on research outputs generated by competitive research funding. These outputs affect the academic careers of the permanent academics and the global ranking of the higher educational institutions (HEIs) (Lynch, 2015; Hazelkorn, 2018; O’Keefe and Courtois, 2019). Senior academics particularly in Science, Technology, Engineering and Mathematics (STEM) use such funding to employ large numbers of postdoctoral researchers (postdocs) on fixed term contracts to not only work in their labs and on their presentations and publications, but also to undertake their less valued teaching and administrative work. Research performing organisations nationally and internationally have largely bought into this entrepreneurial research funding model (Goastellec et al, 2021). The implications of these developments for the careers of postdocs have barely begun to be discussed by the Irish state, funding agencies or HEIs.

This paper is concerned with outlining the postdoc situation internationally; highlighting the national gaps in our understanding of the problem and the limited attempts made to tackle it. The potential implications of the recent Workplace Relations decision (WRC, 2022) are also briefly considered.

A postdoc career typically involves an undergraduate degree (3-4 years), followed by a doctorate (i.e., a PhD; 3-5 years) followed by period(s) as a postdoc under a Principal Investigator (PI- typically a permanent senior academic). The dependence of the postdoc on the PI is extensive- for their current workload, funding, references, sponsorship, contacts, inclusion on conference presentations and publications etc. Traditionally postdocs could expect to get a permanent academic position 3-5 years after their PhD. That situation has now changed globally, partly reflecting the dramatic increases in the number of PhDs and the limited availability of permanent academic positions (O’Connor, 2022). Postdocs have been identified internationally as one of the most productive categories of academic staff. For example, in a survey in Harvard Medical School, 70-97 per cent of the papers published 1990-1999 from select high profile labs had a post doc as first author (*Science*, 285:1531-1532 quoted in Ahmed, 2016: 2).

¹ Email: Pat.oconnor@ul.ie

Bozzon et al. (2019: 38) noted that postdocs typically ended up ‘doing someone else’s job- be it supervising students, reviewing papers, writing projects’- with their contributions being differentially recognised in the publications they contribute to. The longer and more open-ended the position of post doc and the greater the ambiguity surrounding how to move to a permanent position, the greater the power imbalance and the possibility of gender-based violence and harassment (O’Connor et al, 2021; Naezer et al, 2019).

A global study of postdocs found that although these positions were depicted as developmental, postdocs got little guidance or direction from their PI or supervisor: more than half getting less than an hour of one-to-one time each week. The research also showed that they had little job security and an uncertain path to a permanent post, with two-thirds overall, and 80 per cent of those currently working in North America or Europe seeing academia as their preferred career destination (Woolston, 2020). Eight out of ten found satisfaction through their interest in their work; with the proportion who were satisfied being highest among those who had been postdocs for less than two years, and declining after that. However, roughly half of them had been postdocs for more than three years (see also NASEM, 2014). Other studies have shown that most wanted to stay in academia “despite atrocious job prospects” (Zheng, 2018: 241). Such research as has been done on postdocs in Irish HEIs (O’Connor, 2022; Share and Loxley, 2022; Walsh et al, 2015) has highlighted their lack of career paths and uncertain future.

The career outcomes for postdocs vary cross nationally and across disciplines (Le Feuvre et al, 2019, 2020). A recent Swiss study found that after four years, only nine per cent had a position at a Swiss HEI (Conseil Suisse de la Science, 2022). At most 15-20 per cent of US postdocs get tenure-track academic positions; falling to under 11 per cent for those in science and engineering (National Science Board, 2016). In Norway, 20 per cent of all postdocs had an associate or full professorship four years after their postdoc contract (see O’Connor et al., 2022). Getting such positions in that time frame would be unthinkable in an Irish context.

The situation of postdocs has been recognised as an international problem (Akerlind, 2005). The European Charter for Researchers (2005:5) suggested that employers and/or funders should ‘commit themselves as far as possible to improving the stability of employment conditions for researchers;’ with the OECD Global Science Forum (OECD, 2021) launching a project on reducing the precarity of postdocs

The Irish context and its implications as regards postdocs

The Irish academic career path consists of four main positions arranged hierarchically: lecturer; senior lecturer, associate professor and professor. In Irish universities, postdocs are typically located on the research track which is much more attenuated (the highest position is senior research fellow - broadly equivalent to senior lecturer - and only available in some universities). Only 21 per cent of all research graduates in Ireland in 2018 were postdocs (HEA, 2020a): in the US 65 per cent of PhDs do a postdoc (Powell, 2015).

Most postdocs in Ireland appear to be funded by Science Foundation Ireland (SFI), a state-sponsored, research funding and advocacy structure, with a minority being funded by the Irish Research Council (IRC), co-funded by Industry in collaboration with the Department of

Enterprise Trade and Employment, by the EU or by internal research centres or other funding sources. Surprisingly little national data is available about the number, characteristics, career trajectories and ambitions of such postdocs in Ireland.

Under *Innovation 2020* (ICSTI, 2020) the Irish government committed to almost doubling the science budget from 2.9 billion euro to 5 billion euro over a five-year period. This includes a 30 per cent increase in the number of funded postdoctoral positions. SFI is the best resourced Irish research funder and a good deal of its funding is allocated on a competitive basis to Principal Investigators (PIs) of centres to enable them to recruit their own research team, typically employing postdocs on fixed term contracts (their number and salary are indicated on funding applications). However, SFI is unable to provide data on the total number of postdocs they fund, their gender, disciplinary profile, total length of time spent in such positions or their career aspirations.

The IRC mainly provides fellowships to individuals (mostly for two years) thus, reducing the possibility of the holders being in a subordinate position on a long-term basis. There were only 79 postdocs awarded in 2020 (63 of these being for two years). The percentage of the two-year postdocs allocated to women or to Science, Technology, Engineering and Mathematics (STEM) is within a 60/40 range. However, in five of the past eight years the percentage of two-year postdocs allocated to women in Arts, Humanities and Social Science (AHSS)- the stereotypically female pattern- was lower than those allocated to any other category (see Table 1).

Table 1: Two-year postdocs awarded by IRISH Research Council (IRC): percentage and headcount numbers by gender and discipline* 2013-2020

Two year	Female		Male		% Male	% STEM
	STEM	AHSS	STEM	AHSS		
2013	18% (7)	22% (9)	32% (13)	28% (11)	60% (24/40)	50% (20/40)
2014	26% (12)	20% (9)	30% (14)	24% (11)	54% (25/46)	57% (26/46)
2015	28% (17)	18% (11)	33% (20)	21% (13)	54% (33/61)	61% (37/61)
2016	20% (13)	22% (14)	29% (19)	29% (19)	58% (38/65)	49% (32/65)
2017	31% (18)	24% (14)	28% (16)	17% (10)	45% (26/58)	59% (34/58)
2018	26% (18)	18% (12)	28% (19)	28% (19)	56% (38/68)	54% (37/68)
2019	19% (12)	17% (11)	38% (24)	25% (16)	63% (40/63)	57% (36/63)
2020	22% (14)	17% (11)	37% (23)	24% (15)	60% (38/63)	59% (37/63)

*Science, Technology, Engineering and Mathematics (STEM); Arts, Humanities and Social Science (AHSS). IRC, 2021-rounding

The Higher Educational Authority does not collect or publish data on postdocs. However, they provided data on exchequer funded academic contracts 2015-2019 inclusive, which are likely to include them (HEA, 2021). The number of such contracts in the universities is surprising: 2,462 in 2019 (an increase of almost 30 per cent from 1,921 in 2013 to 2,462 in 2019-Table 2)

Table 2: Academic contract research (exchequer funded*) by year: percentages and headcount numbers by gender and discipline areas 2015-2020 in the universities**

	Female			Male				
	STEMM*	AHSSBL	Other areas	STEMM	AHSSBL	Other areas	% Male	% STEMM
2015	34% (659)	6% (118)	2% (33)	46% (885)	6% (120)	6% (106)	58% (1111/1921)	80% (1544/1921)
2016	36% (752)	6% (135)	2% (41)	45% (944)	6% (121)	4% (88)	55% (1153/2081)	81% (1696/2081)
2017	36% (806)	7% (149)	1% (29)	46% (1031)	6% (129)	4% (85)	56% (1245/2229)	82% (1837/2229)
2018	33% (754)	6% (137)	6% (142)	40% (925)	5% (125)	9% (217)	55% (1267/2300)	73% (1679/2300)
2019	32% (778)	7% (184)	4% (103)	41% (1000)	7% (180)	9% (217)	57% (1397/2462)	72% (1778/2462)

*i.e., 'research/specialist academic staff who are employed on programmes/schemes operated by state agencies such as Science Foundation Ireland, Enterprise Ireland, Health Research Board, Irish Research Council, Environmental Protection Agency, Teagasc, etc'. ** STEMM i.e., Science, Technology, Engineering, Maths and Medicine; AHSSBL i.e., Arts, Humanities, Business, Social Science and Law. HEA, 2021b- rounding-

Such contracts are mainly in Science, Technology, Engineering, Mathematics and Medicine (STEMM), with men in those areas being more likely than women to get them. There were much fewer contracts in the Institutes of Technology and the numbers there have slightly decreased (from 255 in 2015 to 210 in 2019). Thus, from the fragmentary and tentative data available it appears that postdoc contracts are most likely to exist in the universities, with men in STEMM being most likely to get them.

Walsh et al. (2015) estimated that there were approximately 2,500-3,000 postdocs in Ireland- and it is extremely probable that this number has increased. Such postdocs tend to progress from one research contract to another, depending on the availability of research funding and their relationship with the PI (who is typically a permanent academic). Data on the precarity of postdocs (defined as recognised researchers i.e., PhD holders who are not yet fully independent: EC, 2021: 156) shows no difference in their gender profile in the higher educational sector (HES) across EU27 (roughly 10 per cent in both cases). Men are much more likely than women to be in such positions in the Irish HES i.e., roughly 24 per cent versus 13 per cent (EC, 2021: 160). It is difficult to interpret these trends. However, a qualitative study of STEM in one Irish university, found that postdocs had frequently been groomed by an academic as an undergraduate, invited to do a PhD with them and then to be a postdoc on their project, where although they are typically interviewed, the position may be one designed by and for them (O'Connor, 2022). Since most senior academics in STEM are male, this informal sponsorship may be more likely to favour junior men.

Paradoxically then, in Irish HEIs, the male-dominated academic track, particularly in STEM, may potentially facilitate precarity and a very uncertain career path- with men more likely than women to access these positions.

Postdocs as a policy issue in Ireland

The Irish University Association (IUA) has produced guidelines as regards postdocs' salaries, increments and job descriptions, but there are no mechanisms for ensuring that these are followed. It suggests that postdocs have 'a primary research role', with their responsibilities including: undertaking research; administrative work associated with that; doing grant proposals; disseminating results and participating in the wider research activities of their research group. There is also reference to participating in 'limited teaching' partly to further their own career and providing 'day-to-day advice and assistance' to other research graduate students (IUA, 2020: 2).

Attempts have been made at national level to highlight the situation of postdocs in Ireland and to identify it as a policy issue but mostly to little avail. The *Strategy for Science, Technology and Innovation 2006-2013* recognised early the need to develop 'attractive career paths for postdocs' (SSTI, 2006) The Interdepartmental Committee on Science, Technology and Innovation (ICSTI 2015: 42) stressed the importance of research mobility between academia and industry and required the Higher Education Authority (HEA) and SFI by 2017: "to establish improved system wide tracking of researcher mobility into industry". No attempt has been made to do this. SFI's *Strategy to 2025* (2021: 28) is virtually silent on postdocs with the exception of identifying a target of 65 per cent of postdocs 'departing to positions outside of academia after six years.' This implicitly suggests that a substantial proportion of postdocs remain on temporary contracts in academia for at least six years. This creates fertile conditions for an abuse of power and gender-based violence (O'Connor et al, 2021). *Impact 2030-Ireland's Research and Innovation Strategy* (DFHERIS, 2022: 43) continues to assert that 'only a minority of early-career researchers will remain in academia', while recognising that contract work and a failure to secure an academic position can be 'challenging for early-career researchers'. For many women, this period in their 30s is one of intense child bearing and rearing- further complicating their potential eventual access to a permanent academic position.

The *SFI-IRC Pathway Programme* launched in 2021 provided funding for 24 postdocs under the 2021 call with a further 24 in 2022 (DFHERIS 2021 refers to funding for 40 early career researchers but it is possible that this number includes PhD students). This funding programme is the first indication of any interest by research funders in postdocs' careers. These positions are four years in duration, half earmarked for women and half in STEM. The specific objective is 'to enable talented postdoctoral researchers to develop their track record and establish themselves as independent investigators'; and 'to provide a mechanism for Irish higher educational institutions to retain excellent early career researchers from all disciplines and support their development toward becoming research leaders of the future' (SFI-IRC, 2021: 3). The identification of both a mentor and letter of support from the host body referring to teaching commitments would suggest that it is being envisaged that these people might subsequently lead a research programme or have an academic career. However, it seems likely that they constitute a tiny proportion of all postdocs and the career outcomes of the rest are unknown.

During the economic recession, the State Employment Control Framework (2011) put a limit on the number of permanent staff that could be employed by each HEI and directed that research positions could only to be filled by fixed term contracts. Prior to the recent Workplace Relations Commission (WRC, 2022) judgement, the understanding was that all researchers on

fixed term contracts, including postdocs, could be made redundant if there were no funds to cover their salaries. However, that judgement concluded that, despite a break of six months (April-October 2017) during the applicants' seven years of contracts, there was an understanding that their employment was to continue. Hence, the WRC (2022) awarded a contract of indefinite duration (i.e., a permanent position) to the applicant under the Protection of Employees (Fixed Term Work) Act 2003 (which implemented EU Directive 99/70/EC). This decision has potential implications for postdoc contracts elsewhere in Irish HEIs – and ultimately for the financial sustainability, gender and disciplinary profile of staff in universities.

The *Report on the Future Funding of Higher Education* (Joint Oireachtas Committee, 2022) identified the need to review contracts provided to researchers as a matter of urgency. To date, there is no national data on their total number or gender profile; the length of time spent in these positions; their career aspirations or outcomes, nor the differences in these by gender or discipline.

Summary

One of the impacts of managerialism in Irish universities has been the increasing focus on research outputs- fuelled particularly in STEM/STEMM by competitive research funding and the recruitment of large numbers of postdocs on fixed term contracts to not only work in labs, but also to undertake the permanent academics' less valued teaching and administrative work. There is no national data on their gender, disciplinary profile, career aspirations or outcomes. With the exception of the *SFI-IRC Pathways Project* launched in 2021 it appears that the perspective of SFI and the HEA seems to be largely shaped by the interests of the universities and/or of permanent academics, with no concern for postdocs' future careers. This kind of perspective is being recognised as a global problem.

The gender, disciplinary and financial implications of the recent judgement by the WRC (2022) arising from the creation of contracts of indefinite duration for postdocs has not been publicly discussed. Insofar as such contracts are predominantly held by men in STEM/STEMM it has implications for the financial sustainability, gender and disciplinary profile of positions in universities.

It implicitly raises the question of whether universities are the most appropriate institutional context for research careers (rather than say, free-standing research institutes with clear career paths). It also raises questions about the implications of the competitive funding model in which an individual PI effectively controls the postdocs' current situation and future prospects. Finally, it is clear that in the context of OECD (2021) and national unease about career paths for postdocs, the absence of any national data on postdocs can no longer be seen as adequate. In that context it is difficult to avoid the question: post doc careers: Who cares?

IUA [Irish University Association] (2020). Post-doctoral Researcher: Level 1 and 2: Job description and salaries <https://www.iua.ie/for-researchers/researcher-salary-scales-career-framework/>

ICSTI (2015). *Innovation 2020: Excellence, Talent, Impact: Ireland's strategy for research and development science and technology*. Interdepartmental Committee on Science, Technology and Innovation <https://enterprise.gov.ie/en/Publication-files/Innovation-2020.pdf>.

IRC (2021) Data supplied by P. Brown.

Le Feuvre N, Bataille P and Sautier M (2020). 'Probationary or second-class citizens?' In: S. Sümer (ed.) *Gendered Academic Citizenship: Experiences and Challenges*. Cham, Switzerland: Palgrave Macmillan. 65–102.

Le Feuvre N, Bataille P, Kradolfer S, et al. (2019). 'The gendered diversification of academic career paths in comparative perspective'. In A. Murgia and B. Poggio (eds) *Gender and Precarious Research Careers: A Comparative Analysis*. Oxfordshire, UK: Routledge. 50–80.

Lynch K (2015). 'Control by numbers: new managerialism and ranking in higher education'. *Critical Studies in Education* 56(2): 190–207.

Lynch K, Gummell B and Devine D (2012). *New managerialism in education: Commercialisation, carelessness and gender*. Basingstoke: Palgrave Macmillan.

Mercille J and Murphy E (2017). 'The neoliberalization of Irish higher education under austerity'. *Critical Sociology* 43(3): 371–387.

Naezer M, van den Brink M and Benschop Y (2019). *Harassment in Dutch academia*. Utrecht: Dutch Network of Women Professors.

National Science Board (2016). *Science and Engineering Indicators 2016*. VA: NS Foundation.

NASEM (2014). *The Postdoctoral Experience Revisited*. National Academies of Science, Engineering and Medicine. <https://www.nationalacademies.org/our-work/the-postdoctoral-experiencerevisited> (accessed 1st March 2021).

O'Connor, P. (2022). 'Probationary Citizenship in Science, Technology, Engineering and Mathematics in an Irish University: A disrupted patriarchal bargain?' *Irish Journal of Sociology* DOI: 10.1177/07916035221122157

O'Connor, P., Hodgins, M., Woods, D.R, Wallwaey, E., Palmen, R., Van Den Brink, M. and Kalpazidou Schmidt, E. (2021). 'Organisational Characteristics that facilitate gender-based

violence and harassment in Higher Education?’ *Administrative Sciences* 11, 138: DOI: 10.3390/ADMINSCI 11040138

O’Connor, P., Le Feuvre, N. and Sumer, S. (2022). Cross national variation in post doc precarity: The role of career structures and research funding models. Unpublished ms

O’Keefe T and Courtois A (2019) ‘‘Not one of the family’’: Gender and precarious work in the neoliberal university’. *Gender, Work and Organization* 26(4): 463–479.

OECD (2021). *The Precarity of Research Careers*: /www.oecd.org/sti/science-technologyinnovation-outlook/research-precariat/ (accessed 3rd March 2021).

Protection of Employees (Fixed-Term Work) Act (2003)
<http://www.irishstatutebook.ie/eli/2003/act/29/enacted/en/html>

Powell K (2015). ‘The future of the Postdoc.’ *Nature*, n° 520, April 9th: 144-147

Share, M. and Loxley, A. (2022) ‘Working in the hidden seam: Postdoctoral researcher lives in Irish universities’. Unpublished ms

SFI (2021a) *Shaping our Future: Delivering To-day, Preparing For To-morrow* (2021) Science Foundation Ireland. <https://www.sfi.ie/strategy/SFI-Strategy-2025-Shaping-Our-Future.pdf> (accessed 3 March).

SFI (2021b). SFI-IRC Pathways Programme. <https://www.sfi.ie/funding/funding-calls/pathway/>

Walsh, J., Seery, A. and Loxley, A. (2015) Exploring Post Doctoral Researchers Lives in Irish Higher Education, Paper presented at ECER, Sept 8-11, Budapest.

Woolston C (2020) ‘The precarity of postdocs’. *Nature* 587 19th November: 505 – 5508.

Workplace Relations Commission (WRC, 2022) Alessio Carratti O Garatti versus the Dublin Institute for Advanced Studies <https://www.workplacerelations.ie/en/>

Zheng R (2018) ‘Precarity is a feminist issue: Gender and contingent labor in the academy’. *Hypatia* 33(2): 235–255