

# What is a Postdoc? Drivers, Purposes, Experiences and Impacts

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In this essay, I focus on PhD graduates who remain postdocs, researchers in academia – not the 40–50% of PhDs working outside academia. After characterizing the different types of postdocs, I explore the drivers behind the growth of the number of postdocs, particularly those on contract; then conflicting stakeholder purposes; followed by the challenges and benefits of the postdoc experience, ending with patterns of stakeholder impact. In doing so, I draw on my knowledge of the literature and 15 years of research into early career researchers. My hope is to paint a broad enough landscape of the postdoctoral regime and postdocs located within it, so readers can situate the other contributions in this special issue.

## What is a postdoc?

In many countries, the notion of doing or having a postdoc, further training after a PhD, is becoming almost an obligatory fact-of-life for those who wish traditional teaching-research academic careers. However, not all postdocs are created equal as to the degree of independence or institutional career support. These differences in role have an impact, though previous studies have not consistently treated them distinctly. The few postdocs awarded a competitive personal fellowship can work where and with whom they wish for the extent of their fellowship, but career support may vary. Those accepted into a competitive fellowship program have somewhat less independence as to where and with whom they can work but are assured of institutional career support during the fellowship. However, the majority of postdocs are those working on contract to Principal Investigators (PIs) who have received funding for their research; in such cases there is much less independence or assured career support. While many of this third group are in the sciences, in the Global North particularly this trend of PI-funded research teams is expanding to the social sciences and, to a lesser extent, the humanities, though teams are smaller, and members may be allowed somewhat more freedom in their research.

## Drivers

The principal driver for the dramatic increase in the number of postdocs is the physical and virtual mobility of assets that drive national knowledge economies and academic research globally. These assets include, for instance, cutting-edge disciplinary and multi-disciplinary

knowledge, methods and methodologies, innovations, and patents. They also include mobile, highly skilled postdocs who carry these assets with them. In fact, postdocs are responsible for a disproportionate share of discoveries and innovations with their mobility moving knowledge across international scientific networks. In the broadest and most positive light, the impact of such mobility should filter out to the institutional host, the funding source, the knowledge economy, the discipline, ultimately benefiting society.

## Purposes

However, there are multiple stakeholders in the postdoc regime: postdocs themselves, PIs, universities, national research funding councils, national priorities and policies, and international development agencies. Each of these stakeholders may have different purposes for postdocs and the purposes will vary by institutional and national priorities. For instance, most national policies encourage the cross-border mobility of assets to achieve national goals, such as being internationally competitive and aiming for robust socio-economic growth. The reasons for this, though, vary across countries. (National policies may also encourage within-country mobility, though this limits the mobility of knowledge in countries with small populations or few research institutions.)

As in cases like the US and the UK, demand cannot be met domestically, they have developed similar policies (e.g., access to visas) and funding strategies (funding councils and universities) that encourage inward-bound postdoc mobility and make them attractive destinations. (Funding councils and universities also have other goals, e.g., first, disciplinary breakthroughs, and second, teaching.) There is national variation in the structures supporting this purpose. For instance, while funding councils in both countries help support national goals, in the US, PI grants embed research training and are understood as promissory, so there is greater potential independence for the PI and contract postdocs as regards the research direction. In the UK, however, the focus in PI grants is finishing the contracted research, so postdocs work to complete promised outcomes to deadlines. In contrast, in less well-resourced countries, like those in Africa or eastern Europe, outward-bound mobility may be encouraged given insufficient or inadequate resources, with the aim that those leaving return with new assets. Here, funding may come from agencies in countries backing UN and other development goals, with access to host countries limited by visa and other eligibility restrictions.

Given ranking tables, universities seek to compete globally in research. To remain competitive, they need postdocs to support PIs in achieving their research goals. As a result, as long as visa requirements are met, many universities leave PIs to hire postdocs independently given the PI is seeking specialist knowledge and experience. In some cases, universities may consider postdocs ‘in training’ (and in some countries national policies may require this), in which case they will offer some career support – though PIs may not encourage postdocs to participate. These examples show

that stakeholder priorities may not align, and in fact, there may be tension with postdocs having to navigate competing purposes to achieve their own goals.

### **Choosing, living, and leaving the postdoc experience**

Doing a postdoc involves choosing to seek a post, then living it, before considering where next.

**Choosing the postdoc.** The end of the PhD brings career uncertainty, both intellectual (the need to become recognized for a unique research profile) and occupational (the need for immediate financial security and, hopefully, at some point permanent academic employment). Both intellectual and occupational careers usually involve geographical and institutional mobility. Yet, deciding what and where is not straightforward with multiple factors in play. Among them are balancing where to move (funding opportunities, postdoc benefits, future assets) within one's larger life (family, values, personal goals). Thus, the decision involves comparing options related in the first instance to home and potential host country contexts (the latter limited by visa requirements, perhaps a different language and discriminatory practices). These concerns spill over into: 1) different university host contexts (reputation, access to resources, postdoc support); 2) PIs' reputations; 3) team environments as a publication context; and 4) social support. These collectively contribute to a positive through poor experience.

Even in considering these factors, the potential postdoc is dependent on and limited by what can be discovered and what is offered. In other words, the PI is, in effect, the frontline immigration officer, within the context of national and institutional requirements. Thus, PIs hire the most suitable postdocs to accomplish the projected work, including publications. In return, postdocs are required to meet the expectations of the job, with the assumption that through this exchange they gain assets – access to new expertise: expensive equipment, fieldwork sites or archives; team publications, and bigger and more productive networks – becoming more competitive for future posts.

**Living the postdoc.** Having accepted the postdoc and moved, the actual experience begins. Here a new set of issues emerges, including adjusting to new institutional, regional, and perhaps national, contexts. In the best of all worlds, there will be high levels of PI support and team collaboration, the research will be well aligned with the postdoc's interests, resulting in greater expertise and more publications, as well as more extensive networks of possible collaborators – all of which will advance the postdoc's intellectual career. Not all postdocs have such positive experiences. Many individuals report minimal PI support, competitive team environments, work that is not aligned with their own interests, discrimination, poor housing conditions, and for some absence from family, and visa issues and/or lack of language training if in a host country. All or any of these cause distractions, sometimes disruptions, to advancing their intellectual careers. Nota-

bly, postdocs are highly unlikely to take advantage of institutional support and resources. Reasons include lack of awareness; PIs not encouraging absence from work; or the support not being seen as useful.

**Leaving the postdoc.** Again, occupational career uncertainty emerges alongside intellectual uncertainty. Where to next that will advance career prospects for those still wishing to remain in academia? Each institutional move can have a short-term negative effect on research output. But, not moving also has a negative effect on career prospects. Postdocs are institutionally and internationally very mobile, relocating to posts they hope will advance their careers. Choosing where to go within broader life goals begins again, so the same issues arise as in choosing the previous postdoc, but hopefully with more assets. This journey of continuing career uncertainty requires resilience and managing possible tensions between intellectual and occupational careers and life goals. But for how long?

### **Impacts**

The increase in the number of postdocs originates in the desire of countries to drive national knowledge economies and research-related organizations to compete globally. In the long term, postdoctoral work achieves a number of different organizational goals: universities can report patents, publications, social impact, etc.; funding councils – intellectual breakthroughs and researchers trained; and development agencies – projects completed. But, the structure to make these happen, the postdoc contract, is transitory. PIs are constantly seeking and training new postdocs and postdocs continue to seek intellectual and occupational certainty through repeated mobility. As a result, while home countries may wish to retain postdocs, the more skilled that postdocs become, the more they can negotiate placements globally. In the same vein, while international postdocs may be attractive to the national research enterprise, visa restrictions may be at odds with this goal and limit a postdoc's ability to remain when the contract finishes. However, postdocs will not necessarily return home to advance research. In fact, the rate of return can be quite low depending on the postdoc's country of origin and the host country. Whether postdocs are presently in their home or host countries, the decision as to 'where next' will be made in relation to which national and institutional contexts postdocs perceive to offer better intellectual and occupational career opportunities alongside individual (and family) quality of life. The 'moral of the story' is that postdocs must become shrewd early on about how to negotiate the postdoc regime to achieve their own goals.

