

What do research staff do next?

2016

- **Careers of researchers who move into occupations beyond academia**
 - **Challenges, career motivations and use of competencies**
 - **Advice for research staff on making successful transitions to other occupations**

‘What do research staff do next?’ published by The Careers Research and Advisory Centre (CRAC) Limited

Produced as part of the ‘What do researchers do?’ series by Vitae

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Vitae would like to thank the following organisations for the support they provided that enabled this important project to happen:

- British Academy
- British Library
- Institute of Physics
- LERU
- Naturejobs
- Research Council of Norway
- Research Councils UK
- Royal Academy of Engineering
- Science Europe
- Wellcome Trust

Vitae would like to thank the many organisations, staff supporting researchers and researchers across Europe who helped distribute information about the project and survey through multiple communication channels. We are grateful to the former research staff who responded to the survey and particularly to those that graciously provided their career stories.

The accompanying career stories of former research staff who moved into occupations beyond academia can be found at www.vitae.ac.uk/careerstories

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Price where sold: £50.00 ISBN: 978-1-906774-58-5

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Executive summary

'What do research staff do next?' has developed a better understanding of how researchers transition from research posts in European higher education institutions to occupations in other employment sectors through an online survey and collecting researchers' career stories.

856 respondents came from 24 member states, representing 55 nationalities, with almost two thirds of responses from women. It is not possible to verify that the respondent sample is representative of the population of research staff who move into other occupations. However, we do believe that the reported experiences of respondents making this transition are typical and the diversity of their occupations illustrative of the opportunities open to research staff.

The majority of respondents had aspired to an academic career while working as research staff in research performing organisations (RPO). Most had published as the principal author; a quarter had had a European or national fellowship. Three-quarters of respondents had left because they wanted better long-term employment prospects, more job security and did not want to be employed on fixed-term contracts. Female respondents particularly highlighted a desire for a better work/life balance. Half of all respondents also cited reasons for leaving as the difficulty of finding an academic position, and wanting a better working environment and higher salaries.

The majority are positive about their move away from academic research. Three-quarters are satisfied with their current employment, while only 18% of respondents continue to have aspirations of an academic career.

Many report challenges, however, in making the transition. For some, the initial decision to move was most difficult; highlighting the difficulty of giving up long-held ambitions of an academic career with the associated loss of social identity. They struggled with a sense of failure or being perceived as failing by their academic colleagues. Others highlighted the challenge of working out what to do and finding suitable employment: of potentially being over-qualified or under-skilled. Respondents also mentioned the challenges of adjusting to different working cultures, dealing with a wider range of people, having multiple reporting lines, multi-tasking and short deadlines.

Respondents noted that the support of their new colleagues was most helpful in making the adjustment, along with the value of their transferable competencies as a researcher. They highlighted being flexible and adaptable, gaining broader experience as research staff, using their networks and getting professional careers advice as important activities in making a successful transition. They also commented on the importance of maintaining motivation during the process: being self-confident, staying positive and persevering. Several respondents noted the importance of being open-minded about opportunities and acknowledging that it may take time to find the ideal job.

The majority of respondents are still working within the research system in some way. Over a quarter are employed in higher education in professional roles, such as in research, innovation and commercialisation offices; as public engagement officers, researcher developers and careers advisors. The life sciences and pharmaceutical sector, and public administration or charities, particularly related to research funding, employ a further third. Some respondents report still maintaining their connection with research through continued collaborations or part-time teaching commitments.

The most common occupations of respondents are research and development manager and researcher, accounting for almost a third of occupations, with significant differences by gender. Research policy and administration managers are also popular occupations. Overall, respondents also reported a wide range of different occupations across all employment sectors. Two-thirds report communication skills as the most important competency for their current job, followed by critical thinking and problem solving, although this varies by occupation.

For most respondents the main challenge was in making the transition to other employment, with the loss of social identity coming through a strong theme particularly for those researchers who are 'still an academic researcher at heart'. Respondents highlighted six key messages for researchers on how they can manage this transition most successfully. We also provide six key messages for how institutions can minimise some of the systemic reasons why these highly talented researchers leave HE research for other occupations and support the transition of those that do.

This project has revealed for the first time the range of employment opportunities open to research staff beyond HE research. The quality and diversity of occupations across a wide range of employment sectors are strongly indicative of a healthy and rewarding employment market for research staff who do move out of HE research.

Introduction

‘What do research staff do next?’ investigates the career paths of research staff (postdoctoral researcher, research fellow, etc.) who left research posts in European universities or research institutes to work in other occupations and employment sectors. Its aim is to provide a valuable resource to aid current and prospective researchers to make well-informed career choices. It will also support research performing organisations (RPOs) to ensure that their career development advice and provision for researchers, particularly research staff, help researchers to be aware of the wide range of career opportunities open to them.

‘I’m looking forward to the results being public. I know plenty of researchers still in academia anxious that they can’t do anything else. I think this will be a great resource for them.’

1.1 Background

Researchers are seen as important human capital to ensure Europe’s economy and society. The European Research Area (ERA) was launched by the European Commission in 2000 with the aim of creating an attractive labour market for researchers, enhancing the quality of research and stimulating economic growth, thereby contributing to Europe’s economic competitiveness. However, Europe has a lower proportion of researchers in the total labour force in comparison, for example, to the USA and Japan, and there has been a drive to increase the number of researchers in Europe. Many initiatives through the European Framework funding programmes, particularly the Marie Skłodowska-Curie Actions, and at member state level have focused on increasing the numbers of researchers, improving their career prospects and their mobility.

ERA also has a target of increasing the combined public and private/business investment in research and development (R&D) to 3% of gross domestic product (GDP) by 2020, from a base of 1.8% in 2002, and 2% in 2014. This European investment in R&D compares with 2.8% in the USA, 3.4% in Japan and 3.8% in South Korea in 2014. The expectation within ERA is that two-thirds of this 3% R&D investment target will come from the private sector. However, in Europe R&D investment in the private sector is increasing at a considerably lower rate than in the USA.

The European Commission have predicted that ERA will require an additional one million researchers by 2020 if it is to meet its GDP target ¹. The number of new doctoral graduates each year has increased significantly from 72,000 in 2000 to 118,000 in 2011, and is expected to continue to grow.

While the numbers of researchers in Europe have continued to increase, there has been little or no growth in the availability of academic positions. Despite this, around 75% of early career researchers aspire to an academic career ². Few are aware of the breadth of career opportunities open to them, particularly beyond higher education. Typically, many researchers experience a series of fixed-term contracts or fellowships while they continue to search for an academic position. This leads to the question: where are these researchers employed if they don’t get an academic position?

1.2 Aims and approach

The overall aim of the ‘What do research staff do?’ project was to develop a better understanding of how researchers transition from research posts in European higher education institutions to occupations in other employment sectors.

Very little is known about the career paths of researchers who were initially employed in higher education as research staff. The project examined how and why early career researchers who have been employed in postdoctoral positions leave higher education and enter other occupations.

The specific aims of the project were to:

- understand the knowledge, views, attitudes and actions of researchers previously employed in higher education in relation to their career

1. Researchers’ Report 2014, European Commission http://ec.europa.eu/euraxess/pdf/research_policies/Researchers%20Report%202014_FINAL%20REPORT.pdf

2. Careers in research Online Survey, UK Aggregate Results 2016, www.vitae.ac.uk/cros

- explore researchers' reflections of their professional and career development needs while in higher education in the context of their current employment
- provide an invaluable resource to early career researchers and those supporting the careers of researchers on potential employment opportunities for research staff considering moving out of higher education research.

As the population of research staff who have careers beyond academia is unknown, we took a predominately qualitative approach to the project. An initial online survey was used to explore the careers of former research staff, their demographic information, and career experiences, particularly relating to the transition from a HE research staff role.

We used the survey to identify respondents who were willing to tell their story of why they decided to leave higher education research and make the transition to another occupation. Many were keen to do so. *'It's a great initiative. I think it's important to tell a more informed and nuanced story of how and why researchers leave academia: it does not have to be due to lack of options or as a sign of defeat. For me, it was an active choice, which has given me great new career opportunities'*. We collected 40 careers stories using a structured template, encouraging respondents to talk about the reasons they left HE research, the challenges and opportunities of the transition and their satisfaction with their current employment. We have illustrated this report with extracts from these career stories. The full set of career stories can be accessed at www.vitae.ac.uk/careerstories.

Promotion and dissemination

We did not have access to any databases of research staff career destinations as few institutions record or track the career paths of their research staff once they leave. However, we took advantage of the fact that researchers are well networked and developed a comprehensive communication strategy to reach out to former research staff from European higher education institutions now working in other employment sectors. This included extensive use of social media, such as Twitter and Facebook; using multipliers such as researcher organisations and communities, including the Marie Curie Alumni Association; promotion through project partners' networks and newsletters, and employer and professional bodies' networks. We also asked current researchers in higher education to forward the survey link to friends and former colleagues who had worked as research staff in higher education. Through these communication channels we were able to reach 856 valid respondents who had worked as former research staff in 24 EU countries.

Due to the distributed approach to reaching survey respondents, we make no claims that the results of this project are representative of the population of research staff who move into other occupations. However, we do believe that the reported experiences of respondents making this transition are typical and the diversity of their occupations are illustrative of the opportunities open to research staff.

1.3 Project partners

We undertook the project in collaboration with Naturejobs, who used their website and other communication channels to promote the project and survey to researchers. Other partners included Science Europe, LERU and the Research Council of Norway who promoted the survey through their networks. UK partners included Research Councils UK, the Wellcome Trust, Royal Society, British Library, British Academy, Institute of Physics, Royal Academy of Engineering, and Institute of Physics.

In the rest of this report we present the results of the survey, illustrated with extracts from selected respondents' career stories³. Where appropriate, we draw out gender differences. In Chapter 2 we outline the demographics of the respondents and their experiences of working higher education. This includes their achievements as researchers, their former career aspirations, and their reasons for leaving HE research. We explore how they made the transition into other employment and what were the most helpful factors, the advice they would give to current HE researchers, and their current levels of career satisfaction and aspirations.

Chapter 3 provides an overview of the current employment profile of respondents, their employment sectors and occupations, and which researcher competencies are most important in their current job. Chapters 4-9 cover specific occupations most commonly reported by respondents. These are:

3. Former research staff career stories www.vitae.ac.uk/careerstories

- Chapter 4 Professional roles in higher education
- Chapter 5 Research outside higher education
- Chapter 6 Research policy and administration
- Chapter 7 Public engagement and science communication
- Chapter 8 Teaching
- Chapter 9 Writing and publishing.

Chapter 10 covers the multiple other occupations reported by respondents.

In Chapter 11 we summarise the range of job opportunities reported by respondents and the challenges they faced in making the transition from HE research. We present the messages for researchers and institutions that emerged from the survey and career stories.

General results

2.1 Respondent characteristics

The survey received 856 valid responses from researchers who had worked as an 'R2 Recognised Researcher'⁴, i.e. research staff, research fellow or postdoctoral researcher, in one or more public research performing organisations (RPO) within the European Union (EU) and had moved on to another occupation. Researchers who had obtained an academic position were excluded from the final sample.

As there were no existing data on the number of researchers who move from academic research positions into other occupations, this was a qualitative project. The aim was to obtain a sufficiently large sample of respondents, such that it was illustrative of the types of occupations for research staff who move from HE research. It was not possible, therefore, to validate whether this sample was in any sense representative of the European population of former research staff. It appears likely that the sample of respondents is biased towards former research staff who are still connected to the research system or their researcher networks. Based on the demographics of the respondents it appeared to be weighted towards:

- research staff whose most recent HE research staff post was in the United Kingdom (UK) (50%)
- UK nationals (39%)
- females (59%), and particularly, female bioscientists with 63% of female respondents from the biological or biomedical science disciplines.

To help contextualise the sample, this section provides a summary of selected demographics for the sample and percentages splits are reported throughout. These data should not be interpreted as being representative of the population of research staff who move from HE research positions into other occupations.

Research discipline

The response profile broadly reflected the dominance of science disciplines in research staff posts, with half of the respondents from the biological and biomedical sciences. Responses from the social sciences, arts and humanities were small, but consistent with the lower number and gender of research staff employed in these disciplines. Overall the disciplinary⁵ and gender profile of respondents was:

- 50% biological and biomedical sciences (72% female; 28% male)
- 29% physical sciences, mathematics and computing, engineering (36% female; 64% male)
- 11% social sciences (66% female; 34% male)
- 6% arts and humanities (54% female; 46% male).

Country of last HE research post and country of origin

Respondents had last worked as HE research staff across 24 EU countries⁶. The most represented countries were the UK (50%), Germany (6%), Norway (6%), Belgium (6%), Spain (6%), and France (5%).

Researchers from 55 countries, and all continents, were represented. 88% of respondents were EU nationals. After the UK (39%), the foremost countries of origin were Norway, France, Spain and Germany at around 6% of respondents. Switzerland, Italy, Belgium, Portugal and Ireland were next, each with around 2-3% of respondents.

Mobility

28% of respondents had research staff experience at a single RPO. Research staff experience of two institutions was more common (35%), while 24% had worked at three and 8% at four institutions. The majority of respondents (57%) had worked as HE research staff in a single country. 29% had worked in two countries for at least three months, 12% in three, with small numbers in four or more countries. On average, respondents who had last worked as research staff in a UK RPO were less geographically mobile, with 72% only working in the UK as research staff and 70% working in one or two institutions.

4. Recognised Researcher (R2) are doctoral holders or equivalent who are not yet fully independent researchers within the European Framework for Research Careers, http://ec.europa.eu/euraxess/pdf/research_policies/Towards_a_European_Framework_for_Research_Careers_final.pdf

5. Discipline areas are grouped in accordance with the UK Research Excellence Framework 2014 Panels: Panel A Biological and biomedical sciences; Panel B Physical sciences, mathematics and computing, engineering; Panel C Social sciences; Panel D Arts and humanities. www.ref.ac.uk/panels/unitsofassessment/

6. Austria, Belgium, Bulgaria, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta, Netherlands, Poland, Portugal, Romania, Spain, Sweden, Switzerland, United Kingdom.

Although the survey did not specifically ask about any intersectoral mobility before becoming HE research staff, some respondents made comments about working in other sector(s) before academia.

Age and experience

The most common age range of respondents was between 31-40 years old. One third of respondents were aged 31-35 and a quarter aged 36-40. Female respondents were generally younger with 71% aged 40 or less, compared with 66% of male respondents.

Including doctoral study time, almost 30% of respondents had worked in HE research for ten years or more. This was more pronounced among biological and biomedical researchers where 34% had worked in HE research for ten years or more. The largest group of respondents had worked in HE research for five years (18%). There was no difference in the overall profile of research experience by gender. Over two thirds had left HE research in the last five years, with slightly more female respondents (70%); a third of respondents had left within the previous year.

On average, respondents whose most recent research staff post had been in the UK were slightly older, had worked in HE research for slightly longer and had left HE research earlier, than respondents whose most recent research staff post was elsewhere in the EU.

Notable also, is that respondents were linguistically confident: 33% spoke two languages fluently, 29% three or more.

2.2 Working as a researcher in higher education

Former career aspirations

While working as research staff in HE 78% aspired to an academic career, very similar to the 77% reported in the 2015 Careers in Research Online Survey (CROS⁷). 46% of respondents had aspired to an HE career in research and teaching, while 36% selected an HE career primarily in research and 5% an HE teaching career (multiple aspirations were reported). Next most noted aspiration was a research career outside HE (24%), more commonly identified by male respondents. This was followed by non-research careers outside HE (11%). Two career options attracted interest from fewer than one in 20 respondents: working in HE in a role other than research/teaching, most commonly identified by female respondents, and self-employment, mostly commonly identified by male respondents.

Achievements

When asked about their academic success, respondents reported a range of achievements:

- Publications: 76% published as principal author; 21% published in a high-impact journal such as 'Nature' or 'Science'; 13% had a monograph published
- Grant funding and fellowships: 26% had won competitive grant funding; 15% awarded a fellowship; 9% had an ERC grant/fellowship
- Prizes: 12% had won a national or international prize

Reasons for leaving HE research

Respondents were asked to consider a range of positive and negative reasons that prompted their move out of HE research. Three reasons stood out, with no apparent gender differences and higher percentages of respondents 'agreeing strongly' than 'agreeing' that they:

- wanted better long-term employment prospects (76% 'strongly agreed or agreed')
- wanted more job security (75%)
- were no longer prepared to be employed on short/fixed-term contracts (69%).

The desire for a better work-life balance was the fourth reason most agreed with (56%). Gender and discipline differences particularly were notable here, with 65% of females but only 44% of male respondents agreeing with this reason, with the

7. Careers in Research Online Survey (CROS), UK Aggregate Results, Vitae, 2015 www.vitae.ac.uk/cros

highest rating from biomedical and biological researchers (64%).

Respondents who had last worked in the UK as research staff were slightly more likely to want more job security (80%) and to no longer be prepared to work on fixed term contracts (74%) than respondents from the rest of Europe.

Other significant reasons

About half of respondents agreed that their move was prompted by:

- difficulty attracting grant funding or a position in the right field
- looking for a better working environment, more commonly female respondents, identified by 58% of female respondents compared with 49% of males
- looking for higher salary potential, more commonly male respondents at 58% compared with 46% of females
- wanting to do something other than research, more commonly cited by female respondents at 52% compared to 39% of males
- wanting to pursue a career outside HE, more often cited by male respondents.

Social science respondents were more likely to look for a better working environment, while those from the arts and humanities were least likely to want actively to pursue a career outside HE (39%). Not being able to 'secure a position in my field' was less frequently reported by respondents who had last worked in HE research in the UK, at 47% compared with 53% for all respondents.

Around one-third of respondents agreed their move was prompted by:

- seeking a job that was a better match with their values
- being offered an opportunity they couldn't refuse (male 39%, female 29%)
- personal reasons, more commonly female (36%) than male (30%), such as particular personal/family circumstances, desire to live in a particular location.

Less reported reasons

A fifth of respondents reported a desire for more secure pension arrangements. Respondents who had last worked in a UK RPO were significantly less likely to report this as a reason (12%). *'The research I wanted to do was best done outside higher education'* was a reason for 12% (but notably 25% of social scientists) and desire to be self-employed/create a business for 11%.

Potential motives which respondents rejected most strongly were: wanting to be self-employed/create a business, with 52% strongly disagreeing, with females disagreeing more strongly than male respondents, and to change sector to continue pursuing research interests (44%). Other statements which over one-third of respondents strongly disagreed with were: wanting more secure pension arrangements; personal/family circumstances; and sustaining dual career relationships.

Free text responses generally reinforced respondents' reasons for leaving HE, highlighting their emotional state: disillusioned; desire for a 'better life'; curiosity or desire for change. Redundancy and personal/family circumstances were identified, the latter mostly by female respondents. A small number of female respondents also mentioned the predominately male research culture and workplace stress as reasons for leaving.

'The project ended because we were unable to secure further funding, so my job ended. At that point, nothing else was tempting me to move away from this career – I would certainly have continued as a historical researcher if I'd been given the opportunity.'

Ian Archer, Arts and Humanities

'At heart, I felt that I had come to the end of what I was interested in: I was able to think of plenty of things I could research but I couldn't think of things I wanted to research. I found this quite demotivating, which really reduced my job satisfaction. I also much preferred working with students, and I wanted to have more of that in my job.'

Lorna Dargan, Social Sciences

'Although funding was available to continue my research, I chose self-employment instead. It was a better fit with my interests and values, and I believed it would offer better long-term prospects.'

Nevio Dubbini, Computer Science

'I felt I needed to leave in order to find a permanent job and one where I could see clear opportunities for career progression. I was well aware of the difficulty of obtaining a permanent post and becoming a research leader. I didn't have sufficient belief that my dream of running my own lab was attainable. It felt important to leave research sooner rather than later, to give me the best chance of making a successful career elsewhere. But it was a very difficult decision to make, because I got so much satisfaction from research.'

Emma Gray, Biological and Biomedical Sciences

'I felt that I had to leave higher education research, though, because I was coming to the end of my third fixed-term contract and was struggling to cope with the stress of academic job-hunting. As mother of a young child ... and with a partner thriving in a stable and successful career, I decided that uprooting my family was not an option unless I could secure a permanent job.'

Anna Tarrant, Social Sciences

'Eventually I became unhappy with the lack of career progression and security. I had been a research staff for over a decade, which is a long time by UK (or anyone's) standards. The short-term contracts were having an increasing impact on work-life balance, as it was hard to justify time off when chasing the next contract. Friends were leaving research after becoming unhappy in the lab like me and I saw them develop successful careers elsewhere. It encouraged me to know that it is possible to leave HE research, not be a failure, and enjoy doing something else. So the hardest thing was just making the decision to leave.'

Fiona Lynch, Biological and Biomedical Sciences

2.3 Transitions to new careers

Current work satisfaction and career aspirations

When asked about their level of satisfaction with their current job and their current career aspirations, more than four in five respondents were satisfied in their current work/job: half of these reported being 'very satisfied', with no significant gender difference. Fewer than one in twenty respondents were 'not at all' satisfied, citing various reasons, such as preferring to go back to HE research, work not sufficiently challenging, dissatisfied with salary, employment conditions, job security, management or nature of work. Social science respondents were significantly more likely to express dissatisfaction with their current job, although these respondents were also slightly more likely to have moved from a research staff position in the previous year and male social scientists were more likely to have experienced a period of unemployment.

The long-term career aspirations of respondents had changed significantly since being employed in HE research:

- only 18% continued to have aspirations for an academic career, from 78% when they were research staff
- the most common career aspiration was for a non-research career outside HE, selected by one-third of respondents
- aspirations to self-employment/running own business/consultancy, and other role in HE both more than quadrupled to around a fifth of all respondents noting each career as an aspiration.

There was little change in the long-term aspirations for a career in research outside HE, at just under a quarter of respondents. As before, male respondents were slightly more likely to report an aspiration to a career in research, both within HE and other sectors. Females were twice more likely than males to report aspirations of a long-term career in HE in roles other than research and/or teaching.

Overall, long-term aspirations showed a more even spread of career interests and were fluid, with movement in various directions, for example:

- a significant number of respondents aspired to further career transitions, e.g. a fifth aspired to self-employment/running own business or consultancy, double those currently self-employed
- only 70% of those who now aspired to a research career in HE held that aspiration as HE research staff
- only 40% of those who now aspired to a research career outside HE were the same individuals who had held that aspiration as HE research staff.

Making the transition

Approaches

Respondents were asked how helpful they had found different job search activities to identify potential areas of interest and employment opportunities. Two-thirds identified public information channels, such as websites and/or print media as helpful, while two-fifths reported their personal networks and a third their professional networks.

One in ten respondents had an existing relationship with their employer and a similar proportion had previously worked for the organisation. Similar proportions reported institutional careers services and recruitment agencies as helpful.

Challenges

Respondents were asked what they found most challenging during their transition to a new career. Most respondents agreed that there had been challenges and described three main challenges:

1. deciding whether to leave, and what to do instead of, HE research
2. difficulties finding suitable employment
3. adjusting to a different type of role and working environment.

Common themes within the free text comments, revealing few gender differences, were:

- identifying transferable competencies and persuading employers of them (39% of comments)
- adjusting to the change in organisational culture (20%)

- dealing with the loss of status/recognition for research expertise (15%)
- deciding whether to leave and what to do (12%).

Also mentioned by around one in ten of comments were: the lack of flexibility in working hours/role requirements; time management issues; and loss of research and academic contact.

Deciding whether to leave HE research, and what to do

Making the decision to leave came through as a strong theme for some respondents. Giving up a long-held ambition to succeed in an academic career route representing years of effort could be very hard: *'the feeling that moving to a 'non-research' position was 'wasting' the time I had spent studying for a PhD and working as a postdoctoral researcher.'* Feeling a failure, or fearing being perceived as a failure by academic colleagues, was a recurrent theme. Another barrier was concern about loss of status and/or income: *'After having carried out a PhD and post-doc I was keen to move into a relatively well-paid job with higher levels of responsibility.'*

For some, the process of researching alternative careers and finding a good fit was long and demanding: *'I wasn't aware of the transferable skills I'd gained in research and where they could be useful, so I found it very hard to work out what sort of jobs were out there that I would be qualified to do and would enjoy.'* Formal retraining or gaining a further qualification were mentioned relatively rarely. Some mentioned challenges associated with retraining, such as *'taking on a completely different role (and) starting again at the bottom rung of the career ladder.'*

Challenges in securing a new role

Persuading employers of transferable competencies

'Persuading people I was not overqualified or under-skilled!' was a common theme. Some respondents described the challenge of being equated to a new graduate by employers unfamiliar with research staff roles, or who had preconceptions of academia. Christine Fuentes Tibbitt says, of seeking a new role in science communication: *'In the selection process both my experience co-ordinating large research projects and my volunteer activities and leadership roles were probed. No-one else in the organisation had research staff experience, so the business-related skills I had gained through my project, such as managing students, multitasking, and presenting and reporting to colleagues and partners, took some explaining during the interview.'*

Coping with prolonged job search

Some focused on the challenge of being resilient during prolonged periods of unemployment. Maria Santos, a botanist, was unemployed for nearly two years: *'I attempted to find an opportunity in research; I did not want to give up because I would feel that I had failed. After a time, I realised that I needed to change my mind and find another job that satisfied me, since research was going through such hard times in Spain.'* Others, not necessarily unemployed, pointed out that competition for posts in their chosen area(s) meant the need to keep motivated during a protracted job hunt: *'to continue in spite of many rejections'*.

Challenges related to new role and working environment

A new job role

Some respondents recalled a steep *'learning curve'*: *'the change from working confidently in a field I knew well to an unknown area where I doubted my abilities'*, often made harder by unfamiliar terminology and jargon in a new sector or occupation.

Adjusting to new working culture/environment

Comments describing a more structured environment were fairly common, such as: greater oversight (*'being closely line managed rather than being independent'*); more frequent deadlines; organisational bureaucracies/slow processes; or a more formal environment *'more professional and hierarchical than in research'*. A few reported difficulties adjusting to a less structured environment: *'switching from an evidence-based and structured environment to a setting where communication and soft-sales skills are key'*, for example consultancy.

Some respondents commented on the challenges of dealing with a wider range of people. This could be *'having to deal*

with clients – and inexperienced management’; ‘adapting to working with colleagues with a wider range of abilities and motivations’ or ‘stakeholder management – I wasn’t use to being answerable to so many people.’

Challenges adapting to a different work culture and job role also affected respondents who moved to a different role within the HE sector. Respondents who remained in a university typically mentioned such issues as: ‘eclectic tasks, short-term orientation of goals and tasks’ and ‘interaction with colleagues with different professional backgrounds’ as well as ‘sitting in an office all day’.

Responses varied to some extent by discipline. Biological and biomedical researchers were most likely to make comments about the challenge of adjusting to a new culture and the lack of flexibility in working hours. Physical science and engineering respondents were less likely to comment on culture shock, but also more likely to be employed in a research role in another sector.

Leaving the ‘research culture’ behind

Respondents mentioned difficulties juggling multiple activities in place of pursuing selected topics in depth: ‘the shift of working intensely on one well-defined research project to having to deal with an endless row of dossiers, problems and questions in research policy and administration, and prioritising’ and the need to adapt competencies and outputs, for example ‘write decision making papers instead of research reports’. For a few, ‘being not challenged in the way research challenges you’ was a cause of considerable dissatisfaction. Some respondents who moved to a research role outside HE reported challenges: ‘projects were short term and you were not in control. You were restricted in the methodologies you could adopt’.

The one in twenty of comments that mentioned time management issues variously described short term projects; strict deadlines; higher pace; frequently changing priorities; and the need to ‘finish something when good is good enough’.

Missing the research environment

For some, the greatest challenge was missing their autonomy as research staff – both the control over work content and hours of work. Some found it hard ‘no longer being an “expert” and having to diversify my knowledge and expertise’. Others commented on the change of physical environment such as ‘the difference in atmosphere between a lab (music, talking, noise of equipment) and the quiet of an office’.

Identity shift

The loss of social identity came through as a strong theme in the challenge of leaving HE research. Some respondents reported deep-seated difficulties in giving up their research staff identity: ‘only a year in to my new role am I finally ready to embrace my post-academic identity’. A respondent who had moved to a different role in HE commented on the challenge of ‘being surrounded by research staff, but not being one of them’.

Job mismatch

A small number of comments highlighted failing to find an appropriate role: ‘the job is not challenging and rather mundane so my brain is rarely required and I often feel bored’; or making the wrong choice: ‘in hindsight I took far too junior a role at too low a salary point, and one in which none of the skills I had were seen as useful by my immediate managers who just had a job they wanted done’.

No challenges

Around one in twenty comments mentioned that not everyone has challenges moving out of HE research. These included: ‘the biggest concern I had – no longer working within the comfortable and narrow range of people I was used to dealing with – was completely unfounded’; ‘the new career is a much better fit for my skills and competencies than a research career’; ‘a completely different environment, not challenging just different’.

Most helpful factors in making the transition

Respondents provided free text comments on what they found ‘most useful in making this transition’. The wide spread of responses ranged from personal characteristics such as flexibility, adaptability and keeping motivated during the search for

employment, through to support, both informal and structured, from colleagues and the new organisation.

Support from colleagues/the organisation

This was mentioned in a fifth of comments, slightly more frequently by male respondents. These comments mostly specified support from the new organisation/new colleagues, but there was also mention of support from previous academic colleagues. Some new colleagues/managers understood transition issues since they had once been research staff themselves. Some organisations were accommodating of, or keen on, links with academia. Credit was given to the new organisation's induction and training, mentoring and other HR structures, as well as skilful line managers.

The value of transferable competencies

Just as frequently mentioned, and slightly more by female respondents, were the value of transferable competencies. At its broadest that might be: *'the fact that I was trained as a researcher – someone who is self-motivated and able to marshal their own work plan with very little guidance'*. This helped with researching potential sectors and employers and *'taking time to pinpoint strengths and targeting jobs that would require them the most'*. Others highlighted competencies relevant to job applications and interviews, such as *'the ability to structure arguments'*; *'tracing parallels between academic research activities and typical business scenarios'*, and self-directed learning, through for example, using MOOCs to learn about different aspects of running a business.

Another group of comments mentioned competencies, experience and previous training enabling successful performance in the new role. Communication skills (written and oral), time management, project management, and interpersonal competencies were mentioned repeatedly, but also more specific competencies, such as *'my consortium building skills, knowledge of bid submission and finance structure'*. A recurring message was to have belief in the power and range of competencies developed as a researcher to enable a successful transition.

Being flexible and adaptable

Comments about flexibility and adaptability generally showed no gender differences and typically mentioned *'being willing to learn, undergo training and be open-minded'*, or were explicitly linked to the transferable competencies gained in HE research – *'relying on the acquired capacity to learn new subjects and adapt to different processes'*. The ability to engage objectively with new information was important for preventing preconceptions about what other sectors were like in the employment research phase, as well as to accelerate competency in the new role.

Gaining relevant or broader experience

One in ten comments mentioned the importance of relevant or broader experience. This could, variously, help strengthen a job application, help access new networks or help ease the transition into a new role. Some highlighted the value of having *'extra-curricular'* experience within the RPO, such as trade union representative or committee work and internships e.g. in the technology transfer office or research office – or more direct external experience, such as *'volunteering at the organisation I wanted to work for!'*

Getting careers advice and using networks

Around one in ten comments mentioned getting careers advice, more frequently by female respondents, and using networks, more frequently mentioned by male respondents. Helpful sources of formal careers advice were university careers service, career coaching, recruitment agencies, and mentoring. Informal sources included friends and contacts who had left HE research, and internet research. Networking included: *'gathering information, mostly through the internet (social/professional networks, etc.) and ...attending job fairs. Some direct connection with former colleagues who also transitioned to another sector.'* Others highlighted practical and emotional support of family and friends as paramount.

Maintaining motivation

The importance of maintaining motivation – perseverance, persistence, determination, enthusiasm, self-confidence and stamina, as well as keeping the end point in view – was stressed in one in twenty comments and more by female respondents. Several respondents cited being driven by *'necessity'*. Wavering self-belief and motivation could be helped, for example, by *'counselling, doing physical work outdoors – having a proper break away from any research activities, talking to*

people in similar situation.

Finally, some respondents described how improved employment and working conditions helped compensate for challenging transitions, e.g. *'reduced and set working hours made the reduced flexibility less difficult to handle'*. Other positives were open-ended contracts, a higher salary or more stable income, better work-life balance and reduced stress, and, for some, greater flexibility than before: *'greater control of my working conditions as a freelancer'*. Also mentioned was using a less challenging job as an interim measure: *'new job was less stressful (but also less taxing and less money), so I had more time to think, adjust and make a new career plan'*.

Advice to other researchers

The survey asked respondents the open question 'what advice would you offer other researchers moving out of higher education into other employment sectors. Most-mentioned themes were:

- recognising and developing transferable competencies, and learning how to evidence them to employers was highlighted in a quarter of comments, and more frequently by female respondents
- encouragement to make the move and particularly to be positive and do it early was also highlighted in a quarter of comments, with over a third of male respondents commenting giving this advice
- research alternatives and think ahead throughout one's career so as to make better decisions was suggested in a fifth of comments.

Other common advice in the comments was to:

- develop and use personal and professional networks (including former research staff who had made a successful transition) for advice, to identify strengths and find opportunities, more frequently mentioned by female respondents
- broaden experience beyond the research role to learn new competencies/sample other types of job while research staff, much more commonly mentioned by female respondents
- try to have a flexible, and patient mind-set, more commonly suggested by female respondents
- attend to self-care, to maintain well-being and self-esteem.

Cultivating open-mindedness was much advised. *'Be open to new challenges and ideas. There is really rewarding work out there. You can emerge out of academia thinking that it is the only place for creativity through ignorance of other environments'*. Some focused on clarifying motivations: *'If it's lab work and doing experiments that you love, then leaving research isn't the right thing. But if it's assimilating knowledge and learning new things that you most enjoy, then there are plenty of other places to get that.'* Encouraging comments were common: *'There are so many other things out there – it's not failure.'*

Open-mindedness also helped make a successful transition: *'Remember research is a quite unique job in terms of flexibility and that your mind-set might need to change'*. The process of shedding the research staff identity could be painful: *'nurture a strong ethic of self-care when making the transition, as sloughing off one's academic identity is no small feat.'*

Respondents advised thorough research into where transferable competencies could be best applied. Research staff should find out about different sectors and individual employers, to optimise chances of a good match for their competencies and interest, and a congenial new working environment. A few advised an open attitude to other careers even when set on a research career: *'Build up your general skill set and have it in mind how you can use these skills in other sectors even if you're not considering switching.'* Networking was seen as an important component of the research/exploration phase; find ways to use networks that are *'comfortable for you'*.

Opinion differed on employers' receptivity to research staff competencies, depending on the employment sector and type of employer. A common view was that research staff had a lot more competencies of value to sectors beyond HE than they often realised, but that time should be invested in translating those competencies into terms that employers would recognise. Rewriting the academic CV to a more competency-based CV was an obvious case in point, but also covering letters and interview preparation.

It was common for respondents, and more so amongst male respondents to urge researchers to move sooner rather than later to allow more time to establish a new career and avoid disappointment in academia. A few pointed out that if the move did not work out, there could be options to return to academia, and several had, or were in the process of, doing so. For others, the decision to leave should not be accompanied by hasty action: *'Stick with it. Keep meeting with*

people. Keep thinking of the things you would like to do. The transition is a patience game. Eventually the right mix of institution, professional connections and job will line up'; 'Believe in how transferable your skills are, but be willing to work on supplementing/developing them a bit.'

A few respondents pointed out that the first move out of academia might not be the ideal move in terms of salary, status, and long-term intellectual stimulation, but a 'sub-optimal' move could be valuable as a stepping-stone. Such a move might be exploratory: 'be patient; your first job is unlikely to be your dream job. Try to use your first job as a means of figuring out what you'd really like to do'. Alternatively, starting at a more junior level might be necessary to gain entry to a new sector. Of science communication and public engagement roles, for example, considering a salary cut might be advisable: 'you are starting again and while this is a bit painful you will find that you move up the ladder again'. On the other hand, feeling stuck in a poorly fitting job with no ultimate goal could lead to unhappiness, lower self-esteem and regret at leaving HE research.

Opinion differed on the benefits of keeping links with academia. A few were enthusiastic about researching in their spare time, usually through retaining links with their previous institution: continuing to publish papers, maintaining collaborations and visiting/honorary lecturer roles. Several also mentioned creating opportunities to research in a non-research role: 'my second non-academic employer has given me the option of engaging in some research activities once again – and I feel I have much more to bring to the table now that I have first-hand experience from the field that I had been researching'. Those in favour of retaining academic/research links were not necessarily aspiring to return to HE research; some now preferred to research as a (low-stress) hobby. More common was the advice to make a 'clean break': 'Make sure you know what you want and you know what to expect in your new job and then leave academia behind completely without regret and you will do really well and enjoy it'.

Theme	Advice
Self-awareness	Understand what motivates you to stay in, or leave, HE research. Look at both positive factors, e.g. interests/passions, and negative ones, e.g. expectations of others, lack of opportunities.
Self-care	Find space to put yourself first, not your research. Be prepared for a lengthy transition process. Develop emotional and practical support networks.
Thinking ahead	Assess your prospects in HE research – be realistic. Have courage to change direction. Make a decision to research your next move before it becomes urgent – and then make career review a regular habit.
Focus on transferable competencies	Don't underestimate your transferable competencies. Assess them objectively: get help from mentors, friends, family, etc. Look at any gaps and take advantage of local provision (courses, careers services) and online provision to develop any important gaps.
Broaden experience	Get involved in work-related experiences beyond your research to explore what you might enjoy doing, and to develop and help evidence your capabilities to employers.
Research and assess opportunities	Be open-minded. Talk to a range of people and research different types of employment that could fit your values and competencies. Get insights into different employers. Consider whether you need to take a step down to get where you want to be in the longer term.
Use networks	Personal and professional networks are a huge resource for information, ideas, practical help and emotional support. Talk to former research staff who have made successful transitions.
Self-belief	Have confidence in what you offer employers. Be patient and persevering. Don't rush into an unsuitable job.
Getting and accepting job offer	Get professional and informal help to ensure you make strong applications and interview well. Know enough about the new work environment to feel confident you can be happy there.
Culture shock	Anticipate the need to adapt to a different type of role, typically with less autonomy, multiple activities and different pace of work. Draw on your existing competencies and attitudes to adjust successfully.
Identity change	Recognise that losing your academic identity could be difficult. Focus on the positives in your new role. Understand the pros and cons of keeping your links with academic research.

3. Employment overview

Respondents were asked about their current employment, terms and conditions of employment and any periods of unemployment since they had been research staff in HE. This chapter provides an overview of the current employment sectors and occupations of respondents and the competencies they developed as a researcher that they most often use in their current role. Salary information is included, but this will be dependent of the profile of the countries of employment of respondents and not directly comparable between employment sectors and occupations.

3.1 Employment since HE research post

- Almost two-fifths of respondents were in their first job since last employed in HE research. One-fifth reported having two jobs since leaving and almost one-third three or more.
- Three-fifths had no experience of unemployment lasting more than one month since leaving HE research; a quarter had one period of unemployment, while a sixth had two or more.
- Half had worked within one organisation since their last HE research post; a fifth had worked in two organisations and a quarter three or more.
- Almost three-fifths of respondents had worked in a single country; rising to three-quarters of UK respondents.

Respondents were working in 38 countries worldwide. Half were working in the UK, followed by 7% in Norway, and around 5% in each of Spain, Belgium, France and Germany.

3.2 Current employment status

- Over four-fifths of respondents were employed and a further one in ten self-employed, with no gender differences.
- Fewer than one in twenty were unemployed or seeking employment, with no gender differences.
- Respondents whose last research staff post was in the UK were slightly more likely to be in employment and less likely to be unemployed.

Of those who gave information about their current employment contract(s):

- seven out of ten had open or permanent contracts
- more than one in ten had part-time contracts, predominately female respondents and bioscientists
- one-third had salaries of €36,000 - €48,000 (£30,000 - £40,000), with similar proportions earning above and below this range.

3.3 Employment sector

Almost three-quarters of current occupations were concentrated in six employment sectors.

- 27% in higher education
- 12% in life sciences and pharmaceuticals
- 12% in public administration
- 9% in charities/the third sector
- 8% in general manufacturing
- 6% in health and social work

Other sectors employing between 2% - 4% of respondents were: consultancy; finance, business and IT; publishing and media; other (non-HE) education, and energy and mining.

Employment patterns by sector include some striking gender differences.

- Working in HE sector: 20% of male respondents, 32% of female respondents
- General manufacturing: 13% of male respondents, 4% of female respondents

- Female respondents were also more common in the charity/third sector and public administration, particularly from the biological and biomedical sciences, associated with prevalence of roles in medical charities, scientific bodies, etc.

Among the sectors employing smaller numbers of respondents, males were consistently more common in finance, business and IT and energy and mining.

Some difference is also notable between respondents who last worked as research staff in a UK HE institution and the rest of Europe. A higher proportion of UK respondents currently worked in the HE sector and the charity/third sector, often in research funders such as medical charities or professional bodies. Those who had last worked in an HE institution in the rest of Europe more often reported employment in: life sciences; public administration; general manufacturing; consultancy; finance; business and IT.

3.4 Occupations

Four-fifths of those in work were employed in one of nine occupations:

1. Research and Development Manager 17%
2. Researcher 13%
3. Function Manager 11%, i.e. working in functions such as marketing and production
4. Research Policy and Administration Manager 8%
5. Vocational or Industrial Trainer/Instructor 7%, including researcher developers and careers advisers/coaches
6. IT and Technology Professional 7%
7. Public/Science Engagement Professional 5%
8. Teaching Professional 5%
9. Journalist/Editor 4%

Other occupations reported by 3%-4% of respondents were: engineering professionals; health professionals; senior manager and officials; and management consultants and analysts.

Employment patterns by gender again show significant differences:

- 20% male respondents working as researchers compared with 9% females
- 21% female research and development managers compared with 11% males
- 10% female vocational/industrial trainers compared with 3% males
- women are up to twice as likely to be employed as research policy managers, public engagement/science communication professionals and teaching professionals
- men are up to four times more commonly employed as IT/technology and engineering professionals.

The distribution of those who had last worked as research staff in a UK RPO was also somewhat different. Vocational or industrial trainer/instructor was fourth most reported (12%) and teaching professionals and journalist/editors (both 6%) were slightly more common than IT/technology and public engagement professionals.

There were expected and unexpected disciplinary differences in occupational role:

- biological and biomedical scientists were twice as likely to be employed as research and development managers and public engagement professionals compared to other disciplines
- no arts and humanities respondents and very few social scientists were employed in research roles
- physical scientists/engineers/mathematicians were more likely to be employed as researchers; least likely to be employed in teaching or training roles
- teaching professional was a particularly common role for arts and humanities respondents, with a quarter in such roles
- respondents from social sciences, arts and humanities were more commonly found as function managers than those from science disciplines.

Although males were more likely to remain in researcher roles than females, the proportion of respondents remaining in

research-related roles (researcher, research and development management/policy/administration) was around 40% for both males and females. This overall response, however, masks disciplinary and gender variations. Male bioscientists and female physical scientists/engineers/mathematicians/computer scientists saw the highest proportion remaining in a research-related role (each at 49%). Conversely only 6% of males from arts and humanities reported a research-related role.

3.5 Use of key competences

It is evident that a great many respondents have moved to roles that make use of their research background. This role may be:

- a research role outside the HE sector
- one that draws on general or detailed subject knowledge, such as research and development manager, research policy manager, teaching professional, editorial professional or consultant
- another role that uses capabilities and experience gained as research staff, for example in public engagement or research administration.

There is significant commonality in the key transferable competencies that respondents report as needed for successful performance in their current role, as shown in the table below.

Competency	All respondents* %	Roles in HE	Teaching	Research policy and administration	Public engagement and science comms	Research outside HE	Writing and publishing
Communication	66%	1	1	1	1	1	1
Critical thinking	49%	6	4	3	5	4	2
Problem solving	49%	4	6	6		2	
Team work and collaboration	46%	5		4	6	3	6
Independent working	46%	2	3	5	3	6	3
Project management	45%	3		2	2	5	5
Adaptability	35%		2		6		
Time management	31%		4				3
Networking	28%				4		

The following chapters look in more detail at the occupational groupings commonly reported by respondents, as follows:

Chapter 5	Professional roles in higher education
Chapter 6	Research outside of higher education
Chapter 7	Research policy and administration
Chapter 8	Public engagement and science communication
Chapter 9	Teaching
Chapter 10	Writing and publishing
Chapter 11	Other occupations

Order of competencies most frequently identified by respondents from this occupation group.
* % respondents identifying this competency as one of six most important to do their current work successfully.

4. Professional roles in higher education

This chapter explores the occupations of former research staff who are now working in higher education in professional roles.

'I love it; as Director of Research Services I do something different every day. One day I might be helping cost a funding proposal to a science research council. The next I could be looking at policy on open access publishing in the humanities, or resolving ethics issues with an overseas funder, or arranging a public outreach event with astronomers.'

Simon Kerridge, University of Kent, UK

Over 27% of respondents work in the HE sector in professional roles.

- Main roles: one-third work in research management and administration, one-sixth in training and development or careers support
- Job satisfaction: two-fifths are 'very satisfied', a further two-fifths are 'fairly satisfied'
- Contract: half have open-ended contracts; a fifth have a fixed-term contract of less than two years; a fifth are on fixed term contracts of between two to five years
- Four-fifths work full time; one-fifth work part-time or as part of a portfolio of jobs
- Salaries: two-fifths report salaries in the range €36,000 - €48,000 (£30,000 - £40,000); a quarter less and a third more than this

4.1 Where do respondents work?

These HE occupations seem to be most well developed in the UK, where three-fifths of respondents in these occupations work. Small numbers (between 3% - 6%) work in: Austria; Belgium; France; Germany; Ireland; Norway; Portugal; and Spain, and the others in a further 14 countries. Employers include universities, public research institutes, and the wider HE sector, including teaching hospitals and science parks.

Respondents work in a broad range of roles in: administration; human resources; scientific support; information services, systems and finance; marketing; policy; public engagement; student welfare and support. The most common areas of work are related to research:

- Research administration – e.g. grant management; commercialisation; knowledge exchange
- Scientific support – e.g. laboratory management; study co-ordination; technical support
- Training and development, and careers support – particularly working with doctoral researchers and research staff.

Typical job titles

- Careers Adviser
- Clinical Project Manager
- Commercial Officer (Intellectual Property Manager)
- Communications Officer
- Data Analyst
- Director of Communications and Graduate Programmes
- Director of Research, Business and Innovation
- Facilities Project Manager
- Faculty Librarian
- Graduate Education Development Manager
- Grant Officer

- Head of Clinical BioManufacturing Facility
- Head of Research & Commercialisation
- Laboratory Manager
- Policy Advisor and Trainer Doctoral Schools
- Project Officer/Study Coordinator
- Quality Manager
- Research and Knowledge Exchange Development Manager
- Research Contracts Officer
- Research Funding Coordinator and Project Officer
- Research Manager
- Research Technician
- Researcher Development Adviser/Co-ordinator/Manager/Officer
- Science and Grants Manager
- Senior Recruitment Officer: UK/EU
- Software Support Specialist
- Staff Developer (Research Staff)
- Strategic Planning Officer
- Technology Transfer Officer
- Trial Manager

4.2 Moving from HE research

Some respondents left research for a professional HE role because they particularly enjoyed the non-research aspects of their role – for example, student support, administration, or laboratory management. Simon Kerridge (former research staff in computer science) points out that *‘one of the...great things about research management and administration as a career change is that you can test the water before plunging right in. As a researcher you can get involved with departmental admin and grant bids and see how you like the experience’*.

Remaining within HE in a professional role was more common among female respondents, who make up 70% of respondents still working in the HE sector. Almost half of the respondents from the arts and humanities still work in HE, compared with one in five from the physical sciences, engineering and mathematics, and almost a third from other disciplines.

Among the motivations for leaving HE research, wanting a better work-life balance was more notable amongst those working in HE than in other sectors at 70% of respondents. Half wanted to live in a particular location, higher than the third in other sectors. Emily Brown, a plant pathologist working in research support, says: *‘I do feel that I am at a point where I could look to progress my career – but at the same time my current job is enjoyable, challenging and works with my home life and I’ve finally realised that there is nothing wrong with this!’*

One in six respondents currently working in HE had previously worked in the same institution as research staff. Almost half have fixed-term contracts, much higher than the fifth across all other sectors, for example as project managers. Jennifer Anderson’s role *‘is maternity cover and is for just 12 months, but has been invaluable experience in transitioning away from bench work [radiation research] and shows that I do have the skills and adaptability to take on different roles.’* Emily Brown gained useful insights by researching potential roles before applying for HE jobs: *‘I spent time talking to, then shadowing research-support colleagues at my university and doing a lot of reading around seemingly dry topics like full economic costing’*.

4.3 Adjusting to a new environment

In general, respondents reported that adapting to a different work culture had its challenges. Respondents typically mentioned learning to adjust to *‘eclectic tasks, short-term orientation of goals and tasks’* and *‘interaction with colleagues with different professional backgrounds’* as well as *‘sitting in an office all day’* and *‘the change in hours worked and going from basically being my own boss to then working in a much more hierarchical section’*. Lorna Dargan, a careers adviser comments: *‘there’s definitely less scope for feeling in charge of yourself, but the trade-off is feeling part of a community working towards a shared goal of improving things for our clients, which I like’*.

Not all respondents moved to more team-orientated environments. Aude Bonehill *'moved to a job where I was quite on my own and had to find out a lot of new things which I knew almost nothing about... Fortunately, as a scientific researcher, you learn how to be creative with problem solving, so that is what I did and I soon felt more comfortable with my new job and learned a lot in a short period of time.'*

4.4 Competencies old and new

Three-fifths of respondents said that they draw on capabilities and experience gained as research staff most of the time in their new role, and a third some of the time. Communication skills were identified by three-quarters of HE professionals as the more important competency. Independent working, project management and problem solving also were considered by more than half of HE professionals as among the most important competencies for success in the current role.

Fiona Lynch comments: *'as researchers we take for granted all the things we do day to day to keep our research running. Nowadays, I certainly value the project management, budgeting, and report writing skills that I gained and that are vital to my job.'* Emily Brown picks out *'the ability to analyse complex sets of data, quickly develop competency in bespoke software applications, adapt to changing agendas internally and externally, present and write effectively...'* Having research staff experience can be particularly helpful when supporting or persuading others. Simon Kerridge says: *'although I was never an "academic" I can certainly converse in their terms – that really helps.'*

Depending on role, respondents' new competencies vary considerably. Jennifer Anderson says: *'I don't feel that I've had to develop entirely new competencies; however I do feel that I've significantly developed my existing ones'*. Fiona Lynch is *'learning about marketing and communication, branding and policy making – all very enjoyable, and completely new to me'*. A few roles, such as careers adviser, may require considerable in-service training.

4.5 Pen pictures: professional roles in HE

Jennifer Anderson, Athena SWAN Advisor and Facilitator, University of Oxford, UK

Former research staff in radiation research, University of Oxford

Jennifer spent eight years in radiation research at the University of Oxford before moving to her current role. She supports the University's medical science departments who are making applications for Athena SWAN⁸. Jennifer guides staff such as heads of department, senior academics and administrative staff on the Athena SWAN process and areas of good practice, often through departmental meetings or by running workshops. She also analyses the demographic data required for Athena SWAN applications; sets up and analyses staff surveys; prepares reports for committees and working groups; and produces copy to ensure that Athena SWAN initiatives are well communicated across the Medical Sciences Division. Jennifer comments: 'I have always had an interest in gender equality so being able to combine this with my research background is definitely rewarding'.

Ian Archer, Skills Development Officer for Postgraduate & Postdoctoral Researchers, Aberystwyth University, UK

Former research staff in history, University of the West of England, UK

In his researcher developer role at Aberystwyth University in Wales Ian is responsible for the design and organisation of professional development programmes for research staff and postgraduate researchers. A historian, his career since leaving HE research has included periods as a visiting university lecturer and as Training Officer at the Institute of Historical Research in London. Ian also has a postgraduate certificate in education (school-teaching qualification). He is still '(infrequently) engaged in teaching/training...giving courses in skills such as time management and team working'. Ian has grown particularly interested in methods and tools for personal development: 'these are aspects of my career and of our provision at the University that I would like to develop further'.

8. Athena SWAN awards recognise a commitment to advancing women's careers in higher education. www.ecu.ac.uk/equality-charter-marks/athena-swan/

Gareth Bicknell, Quality Manager, Oxford Musculoskeletal Biobank, UK

Former research staff in renal pathology and transplant surgery, University of Leicester, UK

Gareth made a gradual transition from research staff to quality manager. As research staff at the University of Leicester, UK he was offered the chance to transfer techniques he'd helped develop in Renal Pathology to Transplant Surgery, as well as to set up a new National Health Service-embedded laboratory for the purpose. Alongside his research into renal transplant gene expression, Gareth improved laboratory management by writing a web-based lab information system, a sample inventory system, and a web-based COSHH (Control of substances hazardous to health) assessment programme. As a result, he was later asked to help out with a new tissue-processing facility for transplant patients, which gave him invaluable experience in quality systems. Two years later, this 'help' was transformed into a managerial role, and, thereby, a full-time systems management job. Unfortunately this job ended some time later due to funding cuts. After a brief stint in freelance COSHH assessment, Gareth became maternity-cover manager for a research biobank at the University of Oxford. When the manager returned, he was retained as Quality Manager. Gareth much enjoys a role that 'most people hate... the daily realities of quality and safety management...but I thrive on getting the required results as robustly and easily as possible'.

Aude Bonehill, Research Manager of the Medical School and the University Hospital of the Vrije Universiteit Brussel, Belgium

Former medical researcher, Vrije Universiteit Brussel, Belgium

Aude spent 12 years in medical research at the Vrije Universiteit Brussel before moving into research management at the same institution. She describes her responsibilities as 'a kind of satellite of the central R&D department. I give advice to the researchers about funding opportunities, applying for personal or project grants (internal and external, national and international). I inform the research community about new calls that could interest them, but also about information sessions, brokerage events... I take care of the institutional scientific fund, which finances scientific projects performed in our research centre and of another fund which finances research infrastructure. I also assist the research council of our centre in its daily activities and in policy making.' Aude is very content with her change of role: 'I had a nice career as a researcher and I hope to have the same as a research manager.'

Emily Brown, Research Impact Officer, Oxford Brookes University, UK

Former researcher in plant pathology, UK

Since moving to Oxford Brookes University a few years ago after four years' research staff experience as a plant pathologist, Emily has worked in research support, business development and back to research support. She feels 'very lucky to have been able to work on such a variety of things, with tremendously supportive managers'. Her most recent post is that of Research Impact Officer, a post linked to the university's preparations for the most recent national research assessment, REF2014. Her role involves working across support teams to develop a systematic approach to identifying and tracking academics' impact. She also provides guidance and advice on changes to funders' policy and supports academic colleagues on the routes that they can exploit to develop their impact. Emily particularly enjoys the variety in her job: 'I can be talking to artists in the morning and computer scientists in the afternoon' and adds 'there is very little about my job I dislike. As in many other universities, navigating our internal bureaucratic structures can be challenging at times, but the obstacles are certainly not insurmountable'.

Lorna Dargan, Careers Adviser, Newcastle University UK

Former Research Associate in architecture, Newcastle University, UK

Lorna is in her second post since leaving HE research. Previously, she had worked as a Research Associate at Newcastle University for six years, in the School of Architecture, Planning and Landscape. After coming to prefer the teaching and administrative aspects of her role Lorna successfully applied for a 12 month Curriculum Officer post, careers teaching on the university careers service's employability modules. This 'seemed like nice, safe sideways step, as I was a bit nervous about leaving academia'. Lorna enjoyed the role and the 'collegiate working environment in student services' and successfully applied for a vacancy for a Careers Adviser (CA). She explains: 'Because the CA role is so specialist, I don't think I would have got it if my colleagues hadn't already known a bit about me and what I was capable of, and so were happy to put me through the training.' The main focus of Lorna's current role is career guidance using a counselling-based approach, and training. Within a set caseload, she undertakes 1-1 sessions with clients (undergraduates, PhD students and staff), and delivers specialised lectures and training. Lorna finds it particularly rewarding when it's apparent 'that you have really helped someone move forward'.

Rossana Espinoza, Staff Learning and Development Adviser, University of Westminster, UK

Former Research Associate in education, University of Leicester, UK

Rossana has changed employment sectors several times in her career. In her native Peru she worked in learning and development in the human resources (HR) departments of two multinational corporations. In the UK she has been a teacher in post-compulsory education and a research associate at two different universities on projects related to the use of ICT in HE teaching, learning and research. In her current role Rossana maintains and improves the University's Learning and Performance Management System. She designs and provides training for staff on how to use it, runs complex reports to enable the University's senior management and HR to take decisions, and develops e-learning modules. Rossana says that 'highlights of this job are having access to learning and development opportunities, for example...coaching and mentoring...[and] a fantastic team and colleagues'.

Simon Kerridge, Director of Research Services, University of Kent, UK

Former Research Assistant in computer science, Durham University, UK

As a research assistant in computer science Simon gained much valuable project management experience in large, multinational industrial collaborations. After his Research Leader moved to another university in the north east of England as its first Director of Research Development he successfully applied to join him as Assistant. However, as this institution 'was quite small in research terms', Simon had a hybrid role for some years, even being principal investigator on one EU research project. A role combining research with research administration would be 'extremely unusual in a central university research office' in the UK nowadays, he says, but 'such roles are still to be found in departmental research support'. Several promotions later, Simon leads an office of 25 staff looking after the research support for the University of Kent. This includes: promoting and advocating for research with funding opportunities; costing and pricing and funding proposal support; contract negotiation; and post-award financial administration. He also works with senior academics and other colleagues on parallel activities such as ethics and governance; research information management; research strategy; and research assessment.

Fiona Lynch, Student Recruitment and Widening Participation Coordinator (UK and EU), University of Manchester, UK

Former medical researcher, University of Manchester, UK

During her 12 research staff years – in the Department of Medicine at the University of Manchester – Fiona developed a keen interest in public engagement work and volunteered at events both in the University and the local region. She also became a Widening Participation Award Holder for a year, a role to support the University's widening participation in HE activities with school students of all ages, which gave her 'lots of training in developing workshops, managing classrooms and communication skills'. Fiona decided to follow her passion for public engagement and widening participation and is now part of the team responsible for the University of Manchester Open Days, of which there are four a year, each with over 10,000 visitors. Fiona helps organise the programme, the student experience exhibition, central speakers and staff rotas, as well as coordinating campus visits for schools and other groups throughout the year. She also co-ordinates training events for staff, develops training material and website content and manages interns. Fiona thrives on the variety and challenge in her role: 'Often I'm busier than when I was a researcher – which seems difficult to fathom – but I absolutely love what I do!'

5. Research outside of higher education

This chapter explores the occupations of former research staff who moved into research roles in other employment sectors.

'You'll lose some flexibility in terms of timing or which topics of research you work on but you will gain some flexibility in terms of what you want to do next. Career progression outside academia is much broader and less directed.'

Rosa Fernandez, Director of Research, National Centre for Universities and Business, UK

Over 140 respondents work as researchers or research managers outside of HE.

- Main sectors: two-fifths work in life sciences and pharmaceutical companies
- Job satisfaction: similar to all respondents averages, with more than four in five respondents satisfied: half of these being very satisfied
- Contract: two-thirds of researchers outside of HE have open-ended contracts
- Annual salary: similar to all respondent averages at a third at €36,000 - €48,000 (£30,000 - £40,000), with similar proportions earning above and below this range
- More likely to be male

5.1 Where do respondents work?

Half are employed in the UK, with another quarter working in France, Germany, Spain, Ireland and Italy. Over a third of respondents work in life sciences and pharmaceutical companies. General manufacturing and health and social work each employ around 13% of respondents. Energy and mining, finance, business and IT, and public administration each employ around 7%. Small numbers are employed in other sectors such as consultancy and charities/third sector. Employers range from large pharmaceutical companies and global oil and gas organisations to small start-up companies; and from government departments and health services to not-for-profit membership bodies.

Typical job titles

- Chief Scientist
- Clinical Research Manager
- Director of Research
- Economist
- Exploration Geologist
- Group Leader
- Head of Research
- Investigator
- Operational Researcher
- Principal Statistician
- Product Development Engineer
- Project Manager
- Research and Development Consultant
- Research Assistant (in a think tank)
- Research Engineer
- Research and Training Manager
- Research Scientist, Educational Testing Service
- R&D Scientist
- Scientific/Technical Support Officer (EU)
- Senior Research Officer
- Study Director

5.2 Moving from HE research

Respondents who left HE for research posts in other sectors tended to have worked for longer in HE research first. Stuart Watson *'had a great time as a contract researcher' but eventually tired of short term contracts and lack of promotion prospects*, as did Murray Booth: *'if you go 'up' you'll end up writing grants, teaching and managing rather than doing research. I just wasn't willing to move around the world chasing jobs that, even if I was successful, would end up taking me away from the parts I liked the most.'*

There were more examples of males working as researchers outside of HE and also respondents from physical science, engineering and mathematical disciplines.

Despite being offered a permanent position in a French public research institution, computer scientist Jean-Baptiste Rouquier decided to join a small company instead (see career story on page 29). For bioscientist Bruce Alexander who set up his own company, leaving academia gave *'the freedom to develop my own ideas, secure funding from a variety of sources and seek opportunities to produce commercially viable technologies'*. Self-employed researcher Fiona Meade feels that ongoing lack of job security is *'balanced out by the opportunity to work under my own terms'*.

5.3 Adjusting to a new environment

Murray Booth has recently moved to an industrial laboratory: *'the difference lies in the resources the company can throw at a project and the time pressure to get things done. There's also a greater sense of continuity as people tend to stay long term...It feels more team oriented, and less isolating than a research staff project where you're the only one working on it.'*

Even though her job required nearly all the competencies she used in HE research, Julie Ferguson found that her new environment as a research manager in the UK's health service felt very different. In particular, working regular hours, in an open-plan office, and with professional colleagues for whom research is only a small part of their role.

Client and stakeholder focus

Rosa Fernandez feels that the applied focus of research outside of HE can be misunderstood: *'delivery in research and policy analysis does not mean misrepresenting evidence or saying what the client wants to hear, it means providing your clients with the best available evidence and let them decide if they want to use it.'*

Client and stakeholder focus was already familiar to Nevio Dubbini, thanks to his HE research experience *'in strong interdisciplinary contexts, where a fundamental part of the research activity was related to understanding the needs and issues of the different sectors, and setting a common language'*.

Competencies old and new

Among respondents working as researchers outside of HE, competencies felt to be most important are: research methods, problem solving, critical thinking, team work and collaboration, communication, and independent working.

Two-thirds of respondents say they conduct research *'most of the time'* and half use their general subject knowledge *'most of the time'*. A respondent now working in public administration advises: *'work on your leadership and project management skills as these are very important in public and private sector organisations'*.

Murray Booth comments: *'while not much of the atmospheric science I've done has been of direct use, almost all the lab skills I've developed have been useful. Building things, getting temperamental kit to work, electronics, using vacuum and gas systems.... Soft skills have helped, namely an ability to write and communicate, and the all-important problem solving skills that research teaches you.'*

Julie Ferguson, whose research management role is in the National Health Service, enjoys maintaining familiar activities and achievements in her current role. She is first author on a number of journal articles and presents findings from studies at various conferences.

While, as one respondent emphasises *'not all research has to be 'academic' to be good quality and rigorous'*, different time pressures apply and *'doing as good a job as possible by a particular date is a common target'*. Adaptability and good communication are both important. Stuart Watson had often worked in isolation in HE research but in his new role found a constant need for *'effective clear communication with colleagues and team members'*.

5.4 Pen pictures: research outside of HE

Bruce Alexander, Managing Director of Xeroshield Ltd, Scotland

Former researcher in ecology, Liverpool School of Tropical Medicine, UK

Bruce set up Xeroshield while working in HE research to develop novel ideas for sustainable insect control: 'I conceive of the ideas, seek funding from the public and private sectors to carry out proof of concept studies and generate intellectual property, with a view to commercialising the technologies that we produce.' Bruce's research staff experience included 11 years at institutions in Colombia and Brazil, and three years at the Liverpool School of Tropical Medicine, UK. His academic experience was *'crucial to establishing Xeroshield, providing me with the knowledge, expertise and practical experience I needed to develop new ideas as well as the basis for a network of potential collaborators worldwide.'*

Murray Booth, Mass Spectrometer Development Scientist, UK

Former postdoctoral researcher in atmospheric science, University of Manchester, UK

After obtaining his doctorate Murray was a postdoctoral researcher in atmospheric science at the University of Manchester for almost seven years. Following his decision to leave HE research Murray used his personal and professional networks to investigate alternative sectors – manufacturing, consultancy and teaching. In 2014, he joined a global corporation that specialises in a range of analytical technologies as a Mass Spectrometer Development Scientist. This involves helping to develop new scientific instruments, integrating, testing and building them. He finds his job has many parallels with academia: 'There are projects to develop better instruments, you're trying to stay ahead of rival labs, experiments are conducted, work gets written up.'

Nevio Dubbini, Self-employed Data Analyst, Italy

Former Postdoctoral Fellow in computer science, University of Pisa, Italy

Although funding was available to continue his academic research, Nevio chose self-employment instead. It was a better fit with his interest in finding solutions to real-world problems and he believed it would offer better long-term prospects. Nevio offers expertise in design of experiments, statistical analyses of data and mathematical modelling. His customers are private companies or HE research groups: 'I help them in turning their data into decisions; querying and explaining data; extracting significant information, making more accurate predictions. Ultimately my service helps in creating value from data.' Nevio has freelanced for two years now and hopes ultimately to set up his own company.

Julie Ferguson, Education and Training Co-ordinator, NHS Education for Scotland

Former research staff in health psychology, Queen Margaret University and the University of York, UK

Julie Ferguson has a varied role as Education and Training Co-ordinator in the NHS Education for Scotland. She carries out qualitative and quantitative research and evaluation, both leading and assisting with research projects in the areas of patient safety, and training, development and appraisal of community doctors and nurses: 'I plan, implement and analyse interviews and focus groups, develop, distribute and analyse questionnaires and write up the findings in reports and journal articles for publication. I also carry out literature reviews, including systematic literature reviews. I plan and deliver research workshops. I also evaluate - and sometimes deliver - education courses.'

Rosa Fernandez, Research Director, National Centre for Universities and Business

Former Research Fellow in economics, University of Oxford, UK

Rosa's first post outside of HE research was not a research role, but in the UK's Government Economic Service, as Economic Adviser for Science and Research, part of the team that justifies spending in and allocates the research budgets in the UK: 'a great opportunity to put my skills to work still within the research sector but without specifically doing research'. After four years Rosa 'was missing time and resource to explore areas of inquiry that were untapped among researchers in the areas of science and innovation'. She successfully applied for the post of Head of Research at the new National Centre for Universities and Business (NCUB), an independent not-for-profit membership organisation. Her current role involves elements of research and administration: 'I design and manage the in-house research plan and resources... [spanning] original new research... [and] the centre's flagship publication... The research team also supports analytical operations across the NCUB in specific projects. As a Director I work with the senior management team in ensuring a smooth running of operations, developing strategic plans and delivering outputs as per our agreed delivery plan.' Rosa finds 'meeting the people for whom I am making a difference very rewarding... I consider understanding "delivery" one of the best lessons I learned outside academia.

Fiona Meade, geologist, self-employed freelance scientist/researcher

Former research staff in geology, University of Uppsala, Sweden

As a self-employed researcher with mostly academic clients, Fiona co-ordinates grant applications and performs outreach work as well as basic research. She has also broadened her services, based on skills honed in academia, to include illustration, proofreading and tutoring, to open up her potential client base. She works part-time and particularly enjoys the flexibility of her work. Achieving an acceptable work-life balance is a key motivation for Fiona, who previously had been juggling a research staff post at a Swedish university with a university teaching post in Scotland.

Jean-Baptiste Rouquier, Data Scientist, Criteo, France

Former research staff in computer science in two government-funded research institutions, France

Jean-Baptiste was working in a French government-funded research institution when he was successful in the national competition for a permanent post as a 'Chargé de Recherche' at another institution. Instead he decided to join a very small company as Researcher/Engineer. 'It wasn't an easy decision to make... I weighted several criteria... alignment with my background and skills; potential for working on interesting questions with smart and nice colleagues; pay; commute to work; future career opportunities...' This company provided risk management research services to the financial sector: 'It sought and applied techniques from different fields of science to help make investment decisions under uncertainty. My role was a combination of original research and computer engineering'. Jean-Baptiste later moved to a much larger company as a Data Scientist (see Chapter 11).

Stuart Watson, Clinical Engineering R&D

Former Research Fellow, University of Glamorgan and University of Wales College of Medicine, UK

After 12 years' working in HE research as a biomedical engineer Stuart joined the UK's National Health Service as Head of R&D services for the medical physics department in a large hospital. Having collaborated with colleagues in the NHS for a decade, he knew the value of their work. While looking for jobs in the NHS, Stuart applied for membership of the professional body for medical physicists and engineers in the UK, which 'certainly helped my CV'. Stuart now manages a small team of engineers developing tailored equipment for clinical and research use: 'I liaise with clinicians, work out what they need, then along with my team, come up with possible solutions: if the customers like it, we build it.... Compared with his HE research work 'the regulation and documentation is a lot more rigorous. When we design and build a device, it will definitely be used on volunteers and patients, and we are the people who are trusted to decide if it is safe to do so.'

6. Research policy and administration

'In academia, you forget how many skills other than research you are constantly developing. The organisational skills, ability to focus, extract information, motivate, lead, train, supervise, think strategically; building networks and horizon scanning – all of these helped me establish my career in a policy environment.'

Sushma Tiwari, Senior Policy Manager, Research Councils UK

Sixty respondents work in research policy, and research administration outside HE.

- Main sector(s): three quarters work in public administration or charity/third sector
- Job satisfaction: Almost a half are 'very satisfied', a further two-fifths 'quite satisfied'
- Contract: three quarters have open-ended contracts
- Salaries: 50% report salaries in the range €36,000 - €60,000 (£30,000 - £50,000)

6.1 Where do respondents work?

Half of respondents work in public administration and more than a quarter in the charity/third sector. Small numbers are employed in other sectors such as consultancy and health and social work. Typical employers are research councils, funding bodies, government departments and agencies, medical charities and scientific/learned societies. Around half work in the UK, and one-tenth in each Belgium and Norway.

Types of roles include:

- Developing, managing or implementing policy in government departments and agencies including research funding bodies
- Science policy research and advocacy (often in the charity/third sector)
- Grant administration and programme management, including monitoring/evaluation and stakeholder management.

Typical job titles

- Head of Science (health policy organisation)
- Higher Education Policy Adviser (funding council)
- Policy Adviser (medical research charity)
- Policy Officer, Project Manager and Quality Support (European Commission)
- Senior Policy Officer (professional body)
- Science Policy Adviser (government department)
- Science Policy Analyst (research council)
- Pre-award Grant Manager (charitable foundation)
- Research Facilitator (care charity)
- Chargé de mission/project manager (government department)
- Grants Adviser (medical research charity)
- Grants and Careers Officer (learned society)
- Industry Programme Manager (academic scientific society)
- Intellectual Property Rights Manager (research council)
- Portfolio Manager (research council)

6.2 Moving from HE research

Respondents in this occupational group show strong interest in career mobility. When deciding to leave HE research, over two-thirds actively wanted to *'pursue a career outside HE'* and *'do something other than research'*. Rebalancing work and home life was also a common motivation. Many also wanted to make use of their research background, like Sushma Tiwari, who sought a job *'where I could use my experience and interests in science and have the flexibility to bring in a work-life balance'*. Current career satisfaction is relatively high with less than 5% wanting to return to a research role in HE. Almost two-thirds intend to remain on a career path of non-research roles outside HE. One-quarter are interested in moving to the HE sector in professional roles and 15% aspire to self-employment.

6.3 Adjusting to a new environment

A relatively large proportion of respondents highlighted support from new colleagues and the organisation. Comments about the more structured environment of many workplaces (particularly in public administration) were also common. Adapting to this environment was facilitated by strong processes. Sushma Tiwari *'found the civil service environment more formal... but also supportive and accommodating of my inexperience'*. Sarah Gutteridge highlighted the benefit of *'clear lines for personal development and career progression'*.

Sushma Tiwari found the *'inflexibility in peer review processes'* somewhat frustrating at first. This became easier as she began to appreciate *'the organisational complexities and constraints'*. Siobhán Jordan highlights having to *'learn a new language (all those public sector acronyms!) and get used to the layers of decision-making that accrue when public money is at stake'*, as well as challenges of *'delivering, at volume, to tight, frequent deadlines'*.

6.4 Competencies old and new

Respondents felt that the competencies most important for successful performance in their research policy and administration roles are communication, critical thinking, project management, team working/collaboration and independent working.

Although relatively few still conduct research on a regular basis, one-quarter said that they occasionally research as part of their job and more than two-thirds still draw on their general subject knowledge to some degree (most of time 43%, sometimes 30%, occasionally 22%). In Beth Thompson's job: *'the analytical skills I gained in research are regularly put to use as my job often involves piecing together varied information and views into a coherent story. However, I never use the subject-specific elements of my research'*.

Peter Thompson recalls learning *'how to communicate with a much wider group of people, rather than just colleagues with a shared understanding of a subject area'*. Sarah Gutteridge emphasises *'learning to write in different styles, for example for board papers and policy documents'*. Beth Thompson needed to develop her networking abilities to build contacts and collaborations with other organisations. Despite initial qualms, she discovered that *'the science policy community is small and friendly and [networking] has become one of my favourite parts of the job'*. Sushma Tiwari was used to driving her own agenda in academia but *'here you identify the experts and then get them to help you define the strategy and policy. This took a bit of practice.'* She gained competencies in *'facilitating meetings; assembling a group of experts to deliver a strategy document; political awareness; and working with multiple stakeholders with conflicting priorities'*.

6.5 Pen pictures: research policy and administration

Beth Thompson, Policy Adviser, Wellcome Trust, London, UK

Former research staff in biochemistry and genetics, MRC Laboratory of Molecular Biology, Cambridge, UK
Beth's first role outside HE research was a one-year graduate traineeship in science policy at the Royal Society of Chemistry (RSC). This gave her 'great experience in fundamental aspects of science policy, such as drafting consultation responses'. After nine months at the RSC she secured a permanent position at the Wellcome Trust, where she has subsequently been promoted and has enjoyed a secondment at the Academy of Medical Sciences to work on a major policy report. In her current job Beth works in a team of 12 with an overarching goal to promote a sustainable environment for biomedical science. This spans influencing science policy and legislation in the UK and the EU and developing the Trust's policies for those it funds. Activities include: developing responses to consultations by Government or other stakeholders; briefing the Director ahead of meetings with key figures such as cabinet ministers; providing briefings and draft amendments to parliamentarians during the passage of legislation; and developing and coordinating approach and position with other organisations in the sector. On a day-to-day basis this involves a combination of desk research and analysis, meetings, phone calls and writing.

Peter Thompson, Assistant Director, National Institute for Health Research (NIHR), UK

Former research staff in chemistry, University of Sheffield, UK
Before moving into public administration, Peter had worked in both industrial R&D and HE research. Looking for greater career security, Peter was attracted by a job advertisement for a Programme Manager at NIHR, the research arm of the National Health Service, then a fairly new organisation with considerable funding for applied health research. Successful at interview, Peter became responsible for a funding stream in the area of research training awards aimed at supporting future research leaders. He managed the funding award process – organising the expert panels, advising applicants and managing those awarded fellowships. After two and a half years Peter was promoted, within the same area of the organisation, to his current role of Assistant Director. In this Peter oversees a group of programmes, involving a large element of staff management. His job also requires 'thinking more strategically how we develop research capacity' so Peter works closely with NIHR stakeholders such as government departments and agencies.

Helen Niblock, Portfolio Manager at the Engineering and Physical Sciences Research Council, UK

Former Postdoctoral Research Associate in medicinal chemistry, University of Oxford, UK
Responsibility for a research portfolio at the EPSRC involves processing grants relevant to the research area, sending out the proposals for peer review and organising peer review prioritisation panels. Helen also keeps up to date with current research in the area by visiting researchers at universities and attending conferences. She's responsible for a number of large grants and training centres, so monitors these grants and attends board meetings. Helen also has organisation-wide responsibilities such as data analysis and work relating to the strategic priorities. She finds her role interesting, 'as I am still seeing the state-of-the-art research, and a lot broader science than if I was still doing research myself. I enjoy travelling around the country talking to researchers and learning about the science they are doing.'

Siobhán Jordan, Director, Interface – the Knowledge Connection for Business, UK

Former research staff in genetics, Trinity College Dublin, Ireland and the Medical Research Council (UK) Human Genetics Unit, Edinburgh, UK.

Career coaching helped Siobhán Jordan see she'd thrive best in a role where she could use and develop her people skills. Galvanised into applying for jobs outside HE research she eventually got the job of Applications Manager for the Proof of Concept Programme, a new initiative developed by Scottish Enterprise, an agency of the Scottish Government, to support excellent academic science with commercial potential. Siobhán's role was to manage grant submissions and the selection process, and to support the successful grant holders to enable them to build fledgling companies. After four years or so Siobhán felt ready for a new challenge. In 2005 she successfully applied for the role of Director of a small new initiative funded by the Scottish Funding Council. Interface acts as a broker between Scottish universities and companies, helping organisations find the right academic expertise to help grow their business. Given a 'blank sheet' to develop the concept, Siobhán has grown demand for Interface's services to such an extent that it now employs over 20 staff in eight locations across Scotland. As well as brokering industry-academic collaborations in many disciplines, Interface runs several different programmes, from funding to common interest groups for multiple companies. Though Interface is government backed it is independent, and Siobhán enjoys a higher degree of autonomy to make decisions than in previous roles.

Sarah Gutteridge, Higher Education Policy Advisor, Higher Education Funding Council for England (HEFCE), UK

Former research staff in physics, University of Nottingham, UK

Sarah's current role is her third since leaving HE research. She first worked at HEFCE in a more junior university liaison role, then returned to HE as Assistant Academic Registrar at the University of the West of England, focusing on quality assurance and enhancement of teaching and learning. With this university experience she was able to return to HEFCE in a more senior, specialist role. Sarah's job is split between: providing information, advice and guidance for a group of universities regarding funding, regulation and implementation of government policy; and working on national policy development for the funding of loans for students and quality assurance at alternative (for example private) providers of HE. She finds the dynamic policy landscape in higher education stimulating and enjoys 'informed, positive, debate about work' with her colleagues.

Sushma Tiwari, Senior Policy Manager, Research Councils UK

Former research staff in genetics, University of Bath, UK

Sushma Tiwari has worked for UK Research Councils since leaving academia. She joined the Biotechnology and Biological Sciences Research Council (BBSRC) as a Peer Review Officer and subsequently moved to the Corporate Policy and Strategy Unit in BBSRC as a Policy and Strategy Officer. She is currently working as a Senior Policy Manager in Research Councils UK (RCUK), the strategic partnership of the UK's seven Research Councils. Sushma manages a portfolio of cross-council policy initiatives and a programme of associated activity – covering such areas as interdisciplinary research and the cross-Council research themes and RCUK input into the Research Excellence Framework (REF). She also helps co-ordinate Research Council submissions to the [UK Government] Department for Business, Industry and Skills for the periodic government spending reviews. Sushma's advice to current research staff is to 'engage with as many external entities as you can' and to volunteer for departmental tasks 'where there are opportunities to develop the so-called soft skills'.

Other pen pictures related to research policy/management and administration

Rosa Fernandez: Chapter 5

David Viner: Chapter 10

7. Public engagement and science communication

'A smaller organisation such as a museum...can make big local impacts, while in a national role you can help facilitate widespread change. I may consider eventually moving on to a role working more closely with scientists, helping them engage and communicate with general audiences. But for the time being I'm thrilled with where I am and what I'm doing!'

Christina Fuentes Tibbitt, Engagement Manager (Regional), British Science Association

Thirty-eight respondents, three-quarters of them female, work as public engagement and science communication professionals.

- Main sectors: four-fifths work in charities/third sector, HE, life sciences and pharmaceuticals or public administration
- Job satisfaction: two-fifths are 'very satisfied' and almost half 'quite satisfied'
- Contract: almost half have open/permanent contracts
- Annual salary: one-third earn between €36,000 - €48,000 (£30,000 - £40,000) and one-third above this

7.1 Where do respondents work?

Almost half of respondents work in the UK. There are also examples from 11 other countries, mostly in Europe. HE employs one-third (31%) and a half work in three other sectors: public administration (21%); charities/the third sector (18%); or life sciences and pharmaceuticals (11%). Almost one in five is self-employed.

Typical employers are universities, scientific/learned societies, medical charities, and museums/libraries. Under the general umbrella of public engagement and science communication, particular themes include young people's engagement with science, widening participation in education (non-traditional groups), and developing public engagement with science and culture.

Typical job titles

- Communications Officer
- Development Officer (cultural festival)
- Education Outreach Officer
- Engagement Manager
- Outreach Manager
- Public Engagement Programme Manager
- Research Communications Manager/Officer
- Science Communications Manager/Officer

A few respondents hold combined roles, for example, Fiona Lynch, Student Recruitment and Widening Participation Coordinator (UK and EU) at the University of Manchester, UK. Others may have a public engagement aspect to their role. Part of Emily Brown's role as Research Impact Manager (see Chapter 4) involves supporting academic colleagues *'on the routes they can exploit to develop their impact...demonstrating how research matters to the wider world'*.

7.2 Moving from HE research

The majority of respondents used active job search (websites and print media) and personal and professional networks to job search. Aware that she would be competing for jobs outside HE with candidates whose background *'recruiters could relate to more easily...event management or a master's in science communication'* Christina Fuentes Tibbitt took on volunteering roles which would enable her to better evidence her transferable competencies. Fiona Lynch says that jobs within the HE sector *'sometimes don't make it to an external advertisement. However, keeping an eye on university job web pages, volunteering to work on events and good networking can often lead to opportunities'*.

7.3 Competencies old and new

Unsurprisingly, respondents feel that communication skills are highly important for successful performance in their role, including the ability to adapt their communication for a wide range of people. Other top-rated competencies are project management, networking, independent working and critical thinking. An understanding of science is essential for science communication roles. As for new competencies gained, Christina Fuentes Tibbitt picks out learning to engage successfully with business people while Emma Gray highlights learning about budgeting and governance.

7.4 Pen pictures: public engagement and science communication

Emma Gray, Research Communications Officer, Multiple Sclerosis Society, UK

Former research staff in molecular neuroscience, King's College London, UK

Emma's new role as Research Communications Officer with the Multiple Sclerosis Society (MS Society) was to communicate the Society's research to all its audiences: donors, people with MS and others. Methods included website content, talks, and answering queries. After a year and a half Emma was promoted to Research Communications Manager, overseeing the entire research communication programme. Her next move at the Society was a temporary promotion (maternity cover) to a high-profile role in research management as Head of Biomedical Research. Emma describes the satisfactions of her work environment: 'stimulating colleagues whose values I share...the variety of people I engage with – a much greater range than I met in academia...getting immediate feedback for the work I do...even 'little things' like being able to dress more smartly for work sometimes'.

Christina Fuentes Tibbitt, Engagement Manager (Regional), British Science Association, UK

Former research staff in cognitive neuroscience, University College London (UCL), UK

Christina's first interview for a science communication role was at the British Science Association (BSA), whose purpose is to advance the public understanding, accessibility and accountability of the sciences and engineering in the UK. Christina was offered the role of National Science and Engineering Week Project Manager: 'Although the job was fixed term for one year and not especially well paid, I decided to take it. I figured that project management at the BSA would develop me more than...other roles that I was interviewing for'. Christina's next job was a promotion at the BSA to her current role. As Engagement Manager (Regional) Christina supports and grows community-based engagement with science across the UK. She much enjoys 'helping people access science in a way that is relevant for them. In a typical week I might meet with a partner organisation to discuss joint outreach projects and events, chat via email and phone with volunteers and event organisers across the UK who are planning science events, and contribute to a funding proposal – as well as do routine tasks such as signing off volunteer expenses, checking the progress of key performance indicators and reviewing the resources we offer our audiences.' Since jobs in science communication are increasingly sought after Christina says a qualification is worth considering: 'it doesn't have to be a master's – there are shorter courses too.'

Other pen picture related to public engagement and science communication

Fiona Lynch: Chapter 5

8. Teaching

'In school...I think that my previous experience as a researcher has a strong influence. I think (I hope...) I am more precise, objective and proactive...and to my surprise I am more patient and indulgent with my pupils (yes, they do not know many things, but that's normal, I am there to teach them these things).'

Alexandra Bourguignon-Lonero, former research staff in ancient languages, Université libre de Bruxelles, Belgium

Around 40 respondents work in teaching professional roles, 70% of them female. Two-thirds of respondents work outside HE.

- Job satisfaction: almost one-third are 'very satisfied' and almost half 'quite satisfied'
- Contract: two-thirds have open/permanent contracts
- Annual salary: almost one-third earn between €36,000 - €48,000 (£30,000 - £40,000) and half below this
- 30% of respondents have a part-time teaching position

8.1 Where do respondents work?

Outside HE lecturing, teaching professional respondents mostly work in schools and further education or vocational colleges. More than half of respondents work in the UK, with small numbers working in eight other countries, including Spain and Belgium.

Typical job titles

- Further Education Lecturer
- High School Teacher/Professor
- Teacher of Science/History, etc.
- Tutor in Adult Education
- Curriculum Leader

8.2 Moving from HE research

In many contexts teaching roles outside HE are open only to candidates with a sector-related teaching qualification. This features in the challenges mentioned by respondents, for example: *'Retraining and taking on a completely different role; starting again at the bottom rung of the career ladder.'* Other respondents had teaching qualifications/experience prior to working in HE research and were returning to the teaching profession. A challenge here might be getting recognition for their research staff experience.

8.3 Competencies old and new

Respondents feel that the competencies most important for successful performance as a teaching professional are communication, adaptability and independent working. Other important competencies are time management, critical thinking, problem solving and team working/collaboration.

Nikolaos Galiatsatos' research area is remote sensing and GIS (geographic information systems). He is now a lecturer at

the Royal School of Military Survey, a UK training and education establishment for defence personnel. Nikolaos had already developed a full teaching portfolio in UK HE which proved very useful for his current job: *'I took the initiative to acquire the PGCert (Postgraduate Certificate) for Teaching and Learning in HE, and thus to become an HEA (Higher Education Academy) Fellow. Furthermore, I seized opportunities to deliver lectures and practicals at different levels (undergraduates and postgraduates) and also supervised doctoral students.'* Nevertheless, he needed to adapt his teaching approach to a new context that focuses on technical and industry competencies. Developing commercial awareness was also necessary.

Alexandra Bourguignon-Lonero, who also had prior teaching experience in HE, says that school-teaching has taught her to organise her lessons and presentations better: *'if you are not precise when talking to young people, they will not understand anything: unlike an educated audience, they cannot compensate for your inconsistencies'*.

8.4 Pen pictures: teaching outside HE

Alexandra Bourguignon-Lonero, Teacher, Belgium

Former research staff in ancient languages, Université libre de Bruxelles, Belgium

After her research grant ended, Alexandra found it very difficult to obtain another, and was unemployed for some months. She eventually decided to apply for school teaching roles, as she wished to continue to work with her subjects of ancient Greek and Latin. However, she 'did not consider teaching enough of a challenge, considering I had a doctorate' and decided to try to supplement part-time teaching with another role. Alexandra is now 'very happy' combining two part-time roles: as classroom teacher of 12-18 year olds and research project manager at a prominent specialist HE institution. She especially enjoys conveying her passion for Latin and ancient Greek to her pupils. Alexandra also keeps in touch with her previous HE institution and has organised workshops and given lectures in her old department. Alexandra advises others to 'Keep possibilities other than research in mind. Yes, it is not easy to find the prestige of the university outside higher education, but in the end, your job is what you make of it.'

Nikolaos Galiatsatos, Teacher, Royal School of Military Survey, UK

Former research staff, Durham University, UK

Nikolaos decided to leave HE for a permanent job after eight years of fixed-term contracts. He moved to the Royal School of Military Survey, a long-established and highly regarded survey training facility for UK military personnel and international students. Although Nikolaos no longer focuses on imparting academic and research skills he comments that his 'academic background is highly appreciated and well received by the students'. His teaching role includes 'plenty of admin' and some 'space to achieve personal research aims'. Nikolaos is an Honorary Research Fellow at his previous HE institution, which gives him a three-year period of continued access to research groups and university facilities. This is allowing him to complete ongoing collaborations and research projects. He'd like to continue to have time to 'pursue research, while helping students mature and achieve their greatest potential'.

Other pen pictures related to teaching

Ian Archer: Chapter 4

Rossana Espinoza: Chapter 4

9. Writing and publishing

'I love the ability to deal with science from diverse fields, the day-by-day satisfaction of completing tasks, ([As an editor] almost all of your efforts achieve something unlike the long and sometimes indefinite timescales of lab research), the longer-term job stability and good work-life balance.'

Darren Burgess, Associate Editor, Nature Publishing Group, former research staff in cancer genetics

Thirty-four respondents work as a 'journalist or editorial professional'. Three-fifths are female, reflecting the gender profile of the survey response overall.

- Job satisfaction: almost a third of respondents are 'very satisfied' and more than half 'quite satisfied'
- Contract: all employed respondents have open/permanent contracts. Almost a third of respondents are self-employed
- Annual salary: over a third of respondents earn between €36,000 - €48,000 (£30,000 - £40,000); two-fifths earn below this
- Hours: one-fifth work part-time

9.1 Where do respondents work?

Three-quarters of respondents are working in the UK; the remainder work in four other countries. More than half of respondents work in the publishing and media sector and a fifth in life sciences and pharmaceuticals sector. Other sectors named by respondents include arts, conservation and heritage and consultancy. Respondents typically work in science publishing roles: as journal editors for large publishers or medical writers for medical communications agencies. Respondents are also employed by pharmaceutical companies in medical information departments, by marketing communication agencies and by scientific societies/professional bodies. Several editorial professionals who responded are self-employed or run their own business.

Typical job titles

- Account Director – marketing communications
- Assistant Editor
- Associate Editor
- Copy Editor
- Development Editor
- Medical Information Manager
- Medical Writer
- Section Editor
- Senior Editor

9.2 Moving from HE research

Since it often offers the opportunity to make use of subject knowledge and research training, specialist publishing is a career option frequently considered by research staff. And indeed, two-thirds of respondents now in journalist/editorial roles said that subject knowledge was important for gaining their new employment, as was having a doctorate. In contrast, only two-fifths felt that having relevant experience was important.

Darren Burgess and Katie White searched actively for advertised vacancies in journal editing and medical writing respectively. Katie, whose HE post was in stem cell research, recalls the selection process – a mix of tests and panel interview: *'I didn't find the tests too difficult, as they were generally based on skills that I had used routinely in my work; reading and interpreting journal articles'*.

Anna Sharman, former research staff in genetics, heard about her first editorial role through networking, first chatting with journal editors at conferences, then co-authoring a mini-review in one of the same company's journals. So *'when they were looking for a temporary editor for maternity cover my name occurred to them and they invited me to apply'*.

Learning the new role can be largely *'on the job'*. Darren Burgess first worked in an entry-level position before being promoted to Associate Editor. Katie White, who landed a job in a medical communications agency, was given projects to work on straight away, which was *'a bit daunting' [but] 'my experience as a researcher definitely helped'*.

9.3 Competencies old and new

Unsurprisingly, communication skills are top of the list of most-needed competencies. The majority of respondents also singled out critical thinking. Other highly-rated competencies are time management, project management, independent working, and team working and collaboration. Katie White explains that, since she often works on several very different projects at once, being able to organise and prioritise tasks is essential. For Darren Burgess, another key competency transferred from HE research is attention to detail. Both Darren and Katie say the new competencies and knowledge they have gained relate to publishing procedures and business competencies such as accounting.

9.4 Pen pictures: writing and publishing

Darren Burgess, Associate Editor, Nature Publishing Group, UK

Former research staff in cancer genetics, Cold Spring Harbor Laboratory, New York, USA and Institute of Cancer Research, London, UK

Darren moved to Nature Publishing Group from the Institute of Cancer Research, London in 2010. Beginning as an Assistant Editor jointly with Nature Reviews Cancer and Nature Reviews Genetics, he was promoted to Associate Editor solely with Nature Reviews Genetics in 2013. Part of an editorial team, Darren deals with manuscripts at every stage 'starting with coming up with the ideas of the articles – most of our content is commissioned by the editorial team rather than being an unsolicited submission from authors'. Later, he works with the authors to 'developmentally edit' their draft article to make sure that it meets standards for 'comprehensibility, structure, interest, etc'. The next stage is coordinating peer review and finally making editorial decisions about if/when the article is accepted for publication. Darren adds 'although handling articles is the main component of the job, no two days are the same because the subject matter of the articles is so diverse and we learn a lot of science just by doing the job'.

Anna Sharman Founder and Director of Cofactor Ltd (scientific publishing consultancy)

Former research staff in genetics, University of Heidelberg, Germany

Anna moved to be an academic journal publisher when she left HE research. A temporary editor job 'led to a permanent editor job for another journal in the same publisher, and then to one with another publisher, where I stayed five years and rose to senior editor'. At that point Anna wanted a job with more flexibility and freedom, so freelance copy-editing seemed a good option, especially as she lived in London where many publishers are based. In the early days she often filled in for assistant editors who were away: 'this helped me build up more contacts in more publishers, as well as gaining lots of experience in how different journals and publishers work.' After several years freelancing Anna wanted a new challenge and decided to further exploit her knowledge about scientific publishing: 'I got training in being a trainer and started to give workshops on how to publish a scientific paper. Then, when my personal circumstances were right, I decided to set up a company.' Anna now has a team of freelancers to deliver consultancy, editorial projects and training workshops.

Katie White, Medical Writer

Former research staff in biomedical sciences, A Coruña Biomedical Research Institute, Spain, and University of Glasgow, UK

On deciding to leave academic research, Katie did online research into various careers. For insights into medical writing she found the MedComms Networking website particularly helpful. Katie also got help from her university careers service to improve her non-academic CV and provide interview practice. Katie points out that her job title does not reflect the range of communication methods used in her work: 'In addition to writing manuscripts for journal publication, other projects I've worked on include: preparing posters and oral presentations for congresses; preparing resources for medical education such as apps, websites and videos; and preparing and attending symposiums and advisory board meetings.' Katie particularly enjoys working on a wide range of therapeutic areas – 'everything from cancer to baby massage'.

Other pen pictures related to writing and publishing

Sari Neijenhuis: Chapter 10

'Don't discount jobs where you think you don't have the background as your skills set can still apply: it will be highly valued in a number of different fields, even if you don't have the specialist knowledge.'

Isabel Franke-Chaudet, Consultant, Aviation sector

One-third of respondents work in occupations beyond those covered in Chapters 4-9. Almost half (48%) are male, above their representation among respondents (40%).

While 'other occupations' spans a huge diversity of occupations:

- significant specialisms are IT/technology (48 respondents); engineering (27); health professions (25); and consultants (22)
- occupations are very largely professional and managerial.

10.1 Where do respondents work?

While some continue to draw heavily on their subject specialism in their work, more respondents make use of their broader subject knowledge and/or research competencies instead. A selection of typical job titles makes this clear.

Typical job titles

Consultants and business analysts

- Consultant (air traffic management)
- Director, Strategic Communications
- IT Consultant (finance, IT, pharma, public sector, engineering)
- Junior Consultant in Innovation Management
- Lead Business Analyst (mainly pharma, life sciences and data management)
- Research and Development Consultant
- Principal Adviser Climate Resilience
- Project Director
- Senior Consultant (technology consulting)

Engineering professionals

- Diagnostics Engineer
- Lead Engineer
- Senior Electronics Engineer

Finance, business and IT professionals

- Chief Analyst (data mining for the energy industry)
- Data/Software Engineer
- Financial Economist
- Managing Director, Investment Banking
- Software Developer
- Venture Partner

Function managers

- Business Development Manager (charity/third sector)
- Operations Manager (health and social care sector)
- Product Line Manager
- Property Manager (charity/third sector)
- Quality Assurance and Regulatory Affairs

Health professional

- Clinical Technologist
- Medical Doctor
- Deputy Medical Director

Law professional

- Trainee Patent Attorney
- Patent Examiner

Public service professional

- Assistant Director (Government department)
- Planning and Evaluation Officer (regional Government)
- Fast Stream Trainee (UK Civil Service)

Senior manager/official

- Group Head of Operations
- Managing Director

Other occupations

- Forester
- Medical Assistant
- Production Machine Setter

10.2 Moving from HE research

Computer scientist Jean-Baptiste Rouquier and climate change expert David Viner have each experienced contrasting work environments since leaving HE research. Jean-Baptiste has worked for a micro-enterprise and a global company, while David has been employed by two government agencies and a large consultancy firm. Both advise research staff who are thinking about leaving academia to put aside assumptions about the nature of different sectors and to apply their research competencies instead. Jean-Baptiste advises research staff to *'get information from contrasting people and sources so you will be entitled to judge'*. David points out that *'the private sector is not necessarily the place where you'll get the highest salary. Many interesting, worthwhile jobs are no better paid than senior jobs in academia'*.

Physicist Isabel Franke-Chaudet and botanist Maria Santos Vicente, moved to commercial roles outside their field of research. Isabel works for an international consultancy company specialising in air traffic management, airports and space. She says that initially the learning curve to improve her understanding on aviation and related fields was *'quite steep'*, but that she was well supported by her employer. Maria, who moved to a biotechnology company, comments: *'the first two years were really tough. Everything was new for me and I had to work hard to reach the level required.'*

For both, research-related competencies helped ease the transition and are used constantly in their current roles. Isabel's research staff experience enabled her to *'absorb new information and complex problems quickly, and to analyse, condense and present information in a coherent way'* while Maria comments: *'I've found that the ability to organise information*

efficiently is highly appreciated, as well as problem solving, thinking logically, and speaking and writing fluently, among other skills.' Ed Ralph, whose career has spanned IT and marketing in biotechnology companies, says: 'my experience as a researcher has been invaluable as a reference point for almost everything I've done with respect to understanding our customers – it has enabled me to speak on the same terms as our scientists, our product managers and our executive team.'

10.3 Pen pictures: other occupations

Calum Baker, Senior Manager, Commodity Research, at leading diversified global mining company, UK

Former research staff in earth sciences, University of Grenoble, France and University of Keele, UK

Calum left academia with research group colleagues to form a spin-out consultancy. He was general manager, responsible for everything from day-to-day office management to business development and project management. Five years or so later Calum embarked on an MBA, which opened his eyes to career directions which could make use of his transferable skills. Having gained his MBA Calum joined the strategy consulting arm of a leading consultancy and data provider specialising in the mining and metals sector, where he progressed through several roles, 'from working on and leading consultancy projects to, finally, managing a research team of 12, responsible for a key sector of the company's coverage.' After five years Calum moved to Singapore with a large global mining company undertaking research into the commodity markets. Three years later he returned to the UK for a more senior role, in his current company. As Senior Manager, Commodity Research Calum's role is to understand the fundamentals of supply and demand for various commodities and metals. Calum explains: 'this work is a key input into the companies' strategy and business development decision-making process. The actual work involves building and maintaining databases and economic models and undertaking basic research to understand the technological limitations and possible future developments that may impact the prospects for a given commodity. I then prepare reports and presentations for key stakeholders in the company.' Calum says of his career to date: 'I'm lucky to have always had interesting work and very motivated colleagues'

Isabel Franke-Chaudet, Consultant, Helios, UK

Former Research Fellow in physics, University of Surrey, UK

Isabel finds her position as a consultant in the field of aviation ideal: 'it offers me the possibility to work in an exciting environment, where I can apply my scientific knowledge'. She enjoys working with clients from very different fields, from industry to policy makers. Less than a year into her new role she has been part of a project team developing a strategy and business plan for an air navigation service provider in a fast changing environment and another working on developing a roadmap for the implementation of a new technology, involving close collaboration with a variety of companies across Europe.

Sari Neijenhuis, Consultant, specialising in research fund-raising, the Netherlands

Former Postdoctoral Fellow in oncology, Institute of Cancer Research, London, UK

In spring 2014 Sari moved from HE research to a small business – a life sciences and biotechnology services company based in The Netherlands. Her role is helping other scientists – both from small businesses and academia – find research funding. This may be small local grants but also major European grants with more than 20 partners. Together with the client Sari designs the project, searches for the best-fit funding body, finds possible partners and collaborators, writes the project, prepares all the budgets, plans the commercialisation strategy, sorts the legal matters and submits the proposals. Although from an oncology field, Sari is now involved in many different projects and enjoys this broadened horizon, working with many different clients from various fields and backgrounds, across several different countries. Highlights of her job are positive client feedback and successful proposals: 'When grants or subsidies are awarded we celebrate these moments just as much as the applicant involved. Having been able to help someone get funding for their research gives me much satisfaction.'

Ed Ralph, Chief Marketing Officer, Axol Bioscience, UK

Former research staff in biochemistry, University of Cambridge, UK

Ed's career direction was set when he left the research lab in 1999 to join a tiny local company, Abcam, which has since grown to a global biotech business. Initially as Abcam's Website Manager (a role he was offered to his surprise, expecting, if anything, a scientific role) Ed thrived on the challenge of learning new IT skills while leveraging his science background. As the seventh person in a fast growing company it was necessary for Ed to 'wear many hats' and adapt to constantly changing circumstances. With support from a newly recruited Technical Director Ed next became Head of IT, 'a combination of programmer, system administrator and manager'. By the mid-2000s Ed was running both IT and eCommerce (digital marketing) and was then promoted to a senior role as Chief Information Officer (CIO): '...a fabulous role, as I had the scientific background to understand where the business was going strategically, the technical resources to create the functionality we needed and the control over the eCommerce website which was the biggest marketing channel for the business.' Further growth led to a later reorganisation which saw Ed specialise in the digital marketing side of his role. Some months after taking a non-executive directorship at new venture Axol Bioscience Ed decided to join the company as Chief Marketing Officer. It was a 'huge step' to leave Abcam, but an opportunity with the 'key ingredients from before: a start-up company, life science and digital marketing'.

Jean-Baptiste Rouquier, Data Scientist, Criteo, France

Former research staff in computer science in two government-funded research institutions, France

Jean-Baptiste worked as a researcher in a small company when he first left academic research (see pen picture in Chapter 5). Then in 2012, he was re-approached by a company that had contacted him previously: 'the job I was in wasn't satisfying for a number of reasons, so I moved to this very different employer'. He now works for a global organisation with some 1,200 employees, which develops new ways for advertisers to attract, and sell to, online buyers. Jean-Baptiste's role is to improve the accuracy of machine learning algorithms on big data, especially by generating, analysing and selecting new data to improve the prediction engine. Although Jean-Baptiste had to get used to delivering work quickly by 'losing the more perfectionist mentality of academic research' he now enjoys the faster pace and 'good execution: things get done'.

María Santos Vicente, Product Specialist, Cytognos, Spain

Former research staff in botany, University of Salamanca, Spain

María's developing research career was cut short when 'from 2009, Spain reduced science funding drastically and I found it almost impossible to work on projects in botany.' Two years after her last research staff contract, she was delighted to be offered a post as Product Specialist at Cytognos, a biotechnology company based in Salamanca that provides innovative solutions in the flow cytometry field. Her job is to support customers - hospitals and research centres - in the implementation of these developments worldwide. María often visits customers to give personalised support, and organises training, as well as attending events such as conferences and exhibitions. At the office, her tasks range from helping other departments (e.g. IT, R&D) with technical documentation, to managing the corporate Twitter account. María now feels 'very comfortable' in the commercial environment, commenting: 'companies often require proactive people and I realise this is a fundamental skill; you need to detect opportunities, take on challenges and take decisions.'

David Viner, Principal Advisor, Climate Change, Mott MacDonald, UK

Former research staff in the Climatic Research Unit, University of East Anglia, UK

David had a high profile in a hugely influential research unit, but when promotion within academia would have meant relocating, decided to look for opportunities locally instead: 'the experiences I'd had working with various external organisations had made me positive about the idea of moving into a different sector'. Since then David has been Lead Advisor on climate change at Natural England, a UK government agency; a self-employed consultant; a senior leader at the British Council (where he designed and operationalised a global programme on climate change) and, now, Principal Advisor, Climate Change at Mott MacDonald, a global engineering, management and development consultancy. David says: 'the climate resilience aspects of sustainability have become increasingly important in all sorts of projects. My role involves me in a wide range of activities – bid writing, business development, thought leadership (speaking at conferences, writing papers)...An important part of my role is to build capacity within the company and raise our profile internationally. I'm involved in a huge variety of projects, from feasibility studies for hydropower schemes to risk assessments for buildings projects, to education projects overseas.'

11. Conclusions and recommendations

11.1 Employment opportunities

This project has revealed for the first time the range of employment opportunities open to research staff who move from academic research. Although there is no way to know if the sample of respondents is representative of the broader population of research staff who move into other occupations those that did reply are working in a wider range of occupations and employment sectors. The results disprove the common conception that research staff are unemployable or underemployed if they do not achieve academic positions.

Furthermore, the respondents reported high levels of job satisfaction and use of their research experiences and competencies. Nor is it apparent that these research staff had to cease all connection with research. Conversely, there is strong evidence that these respondents are making critical contributions in sustaining the health of the research system.

'To see it as an opportunity – not a loss or personal defeat'.

Almost a third of respondents are employed as researchers or research managers in other employment sectors. Around two-fifths are employed in the life sciences and pharmaceuticals, some with considerable years of experience as research staff in HE before moving.

More than a quarter are working as professionals in higher education, many directly supporting the research environment by working in graduate schools, research, grant and innovation offices, knowledge exchange and commercialisation offices. They are supporting researchers as staff developers, researcher developers and trainers, careers advisors and librarians. Many of these roles are newly created positions within RPOs as a result of the increase in the provision of structured doctoral programmes and the increased complexity of research and innovation activity and competitiveness for research funding. Research groups are increasingly employing research managers. The experience that research staff bring to these roles is highly appropriate and valued.

About a fifth of respondents are employed in public administration and charities. Closer examination reveals that these respondents generally are employed in research policy and administration. Many are working in public research funding agencies and research charities developing and implementing policy, or in grant and programme administration. There are also small proportions of respondents working in public engagement, science communication, writing and publication relating to research.

Finally, one of the messages coming through in the respondents' career stories and free text is that it is not always necessary to let go of their research: some found ways to stay connected with their research group or area, or arranged part-time teaching commitments.

'To remember that it doesn't have to mean an end to teaching or research. After one year outside academia, I returned to teaching as a part-time lecturer. Also, my second non-academic employer has given me the option of engaging in some research activities once again – and I feel I have much more to bring to the table now that I have first-hand experience from the field that I had been researching.'

The dissemination methods for the survey most likely have resulted in a bias towards respondents who are still close to academia or networked with current research staff. This is reflected in the high proportion of occupations that are contributing to the sustainability of the research system. Nevertheless, the quality and diversity of occupations across a wide range of employment sectors are strongly indicative of a healthy and rewarding employment market for research staff who move out of HE research.

'Nowadays, I feel really comfortable in my job. Of course, it was a hard decision and I felt disappointed about giving up research. In fact, I did not give up completely; I still collaborate with my former research group, when I can devote time to it. However, I know that I took the right decision at the time. Sometimes I miss some aspects of my previous life (mainly field trips) but my job has given me a different point of view. Now I realise that there is not just one way to fulfil your career expectations.'

11.2 Challenges in making the transition

Despite these potential employment opportunities, the decision for research staff to move out of HE research can be hugely challenging and an emotionally difficult process, even for those research staff where it is a proactive choice. For many the ambition to become an academic is longstanding and they will have invested considerable effort in trying to achieve this. Much of their social identity may be wrapped up in the idea of becoming an academic. Looking for a new job is difficult enough: building a new social identity because they will no longer belong to the 'academic community' adds to the potential stress.

'Trying to let go of the feeling that I had failed because I couldn't get a permanent job in academia and not letting that get in the way of the new work I have.'

'Coming to terms with the fact that I would no longer be working in academic research when that had always been my goal.'

'Identity shift - having a sense of esteem and capability which was independent of [a] research role.'

The loss of social identity comes through as a strong theme in the career stories and survey free text responses. Four main categories emerge in terms of respondents' frame of mind in making the transition to other occupations.

1. **Still an academic researcher at heart.** These research staff feel forced to leave academia because posts/funding are not available; they realise the long term career prospects are poor, or because of a degree of mismatch with their personal circumstances. The 'head' says leave, but the 'heart' says stay.
2. **Lost their passion for research.** These research staff were previously absorbed in HE research but have lost their interest/motivation for research. They are likely uncertain about alternative career directions and their own competencies.
3. **Disillusioned with academic research.** These research staff want to continue to work as a researcher but outside HE. They are likely to have different possible motives for moving: they are disillusioned with academia or their current research group/institution; they need to move to do the research they want to do; or they judge there are better working conditions as a researcher in other sectors, etc.
4. **Pragmatic about academic research.** These research staff were never firmly set on a research career in HE. They usually enjoyed it, but are ready to move on to different experiences. They may have taken a research staff post as a means to a particular end, i.e. always seeing working in HE research as a time-limited stage in their career.

The transition process, i.e. adapting to a new role and working environment, is likely to be more challenging when it also involves replacing a researcher identity with a new professional identity. Some respondents reported that the most challenging aspect of the transition process was making the initial decision to move.

Particularly for those in the first category, and many in the second, the identity shift is likely to take time because the academic researcher identity is strong. For those in the last category, where the academic researcher identity is not so strong, the transition may be shorter and easier.

The degree to which respondents find the transition challenging is also influenced by such factors as:

- the nature and 'fit' of their new employment
- the competencies they brought to the new role
- recognition of their expertise/status in their new role (or a clear path to achieving this expertise/status)
- the level of support from new and old colleagues and managers.

Taking away an all-absorbing research role could leave some disorientated.

'Relaxing and switching off from the pressure to generating funding to pay my own wage. Allowing myself to have a better work/life balance.'

The ease of transition could also be impeded by residual academic commitments.

'Finishing ongoing third-party funded research projects, taking care of a funded PhD student while not being at the University anymore. Demanding new job did not leave much time to finish the writing up of scientific publications. Securing the time to complete teaching obligations at the University.'

The challenges of adapting to a new environment are not necessarily any easier for those with stronger motivation to leave HE research. Female respondents from biological and biomedical sciences reported *'wanting to do something other than research'*, but a high proportion also reported challenges in adapting to a new environment. Neither does staying in the HE sector protect former research staff from experiencing transition challenges. Respondents in professional roles in HE still reported challenges in adjusting to the different work culture.

11.3 Messages for researchers

The survey responses and career stories provide clear evidence that former research staff are making successful transitions into new occupations and careers. They are finding new jobs that they are equally happy or happier in, and are developing new professional identities. They are using their research experience and competencies in variety of productive and rewarding ways.

The key messages from former HE research staff who have made successful transitions include:

Don't see a move out of HE research as a career failure. 'It is a side step not a failure and coming to terms with that is important for well-being. Academia has become an increasingly insecure and competitive environment that requires you to move multiple times and to do multiple fixed term contracts to try and get a permanent position. Making peace that the problem is contextual as well as personal makes it that bit easier to justify working elsewhere and using your skills elsewhere'.

Put yourself first and take action. Your loyalty should be to yourself. Work out what you really want and start creating time to prepare for your next move. Successful transitions take time: be patient, but active. Explore your motivations, for example: how important is staying in your comfort zone?; how much are you influenced by expectations of others?; are you prepared to take a short-term drop in status/salary?; etc. Ignore the myths – it is never too late to move: researchers make successful transitions however long they have worked in HE research. Build up your understanding of alternative sectors and jobs, and your transferable competencies, particularly your communication skills.

Consider whether you want to maintain a dual identity. It is possible to maintain some degree of research activity if you move out of HE research. This could be through ongoing projects, collaborations, becoming an honorary research fellow, delivering seminars, workshops and teaching, etc. However, be aware of the level of commitment this will take on top of the challenges of adjusting to a new environment.

'Decided to continue collaborating on academic projects in my 'spare' time, writing papers and effectively adopting a dualistic approach to work-life – project manager by day, academic by night.'

'If you [leave HE research], do it full time and with enthusiasm – do not think that you can stay one day a week in research in addition - or even worse: do research on the weekends.'

Apply your researcher competencies to investigate options and opportunities. Do not prejudge your opportunities: question your preconceptions and prejudices. Research your opportunities by referring to different sources of expertise, professional associations, etc. Compare options by getting wider first hand experiences, talking to people in different occupations, and seeking professional careers advice. Don't just rely on 'active search' i.e. public information and advertised vacancies. Review your personal and professional networks and be proactive and methodical about using them for information, advice and potential leads. Create an overall plan with flexibility built in, for example, you may be looking for permanent full-time employment, but a fixed-term or part-time post could offer valuable experience and a useful stepping stone to your ultimate aim.

Believe in your researcher competencies to help you get suitable employment. As an experienced researcher you have a wealth of competencies that are transferable into other environments. Practice articulating them in a language that employers can understand for successful applications and interviews. Present your competencies in a CV style that is appropriate for the job and employment sector you are applying for: an academic CV is only appropriate for academic applications. Don't undervalue yourself, but 'be humble': remember you are making a significant transition and that you may need to accept a position as a means to an end or a breathing space.

'It was ironic that I had to take a short-term position in order to break into a new career, when this was one of the things I found off-putting in research. However, the gamble worked; I love my new career.'

Prepare to find the transition period challenging. It is likely that you will experience the culture shock of moving to a different environment – even if you stay in HE. There are likely to be challenges even if you are keen to move from HE research. Have faith in your researcher competencies to help get you through the challenges. Be aware of the potential emotional impact of losing your academic identity. Make sure you have emotional as well as practical support, especially if loss of academic identity is an issue for you. Use your peer networks for mutual support: get help from and provide help to colleagues going through the same process. Take advantage of your institutional and Vitae resources to support research staff⁹.

Theme	Advice
Self-awareness	Understand what motivates you to stay in, or leave, HE research. Look at both positive factors, e.g. interests/passions, and negative ones, e.g. expectations of others, lack of opportunities.
Self-care	Find space to put yourself first, not your research. Be prepared for a lengthy transition process. Develop emotional and practical support networks.
Thinking ahead	Assess your prospects in HE research – be realistic. Have courage to change direction. Make a decision to research your next move before it becomes urgent – and then make career review a regular habit.
Focus on transferable competencies	Don't underestimate your transferable competencies. Assess them objectively: get help from mentors, friends, family, etc. Look at any gaps and take advantage of local provision (courses, careers services) and online provision to develop any important gaps.
Broaden experience	Get involved in work-related experiences beyond your research to explore what you might enjoy doing, and to develop and help evidence your capabilities to employers.
Research and assess opportunities	Be open-minded. Talk to a range of people and research different types of employment that could fit your values and competencies. Get insights into different employers. Consider whether you need to take a step down to get where you want to be in the longer term.
Use networks	Personal and professional networks are a huge resource for information, ideas, practical help and emotional support. Talk to former research staff who have made successful transitions.
Self-belief	Have confidence in what you offer employers. Be patient and persevering. Don't rush into an unsuitable job.
Getting and accepting job offers	Get professional and informal help to ensure you make strong applications and interview well. Know enough about the new work environment to feel confident you can be happy there.
Culture shock	Anticipate the need to adapt to a different type of role, typically with less autonomy, multiple activities and different pace of work. Draw on your existing competencies and attitudes to adjust successfully.
Identity change	Recognise that losing your academic identity could be difficult. Focus on the positives in your new role. Understand the pros and cons of keeping your links with academic research.

9. www.vitae.ac.uk/researcher-careers

11.4 Messages for institutions

The challenge of maintaining an HE research career in a highly-competitive environment employed on a series of fixed-term contracts, often moving institutions and countries, is well documented. This was reflected in the survey responses where the most frequently reported reasons for leaving HE research were systemic ones:

- three quarters were dissatisfied with their job/career prospects as a researcher in HE
- almost three in five respondents expressed the desire for a better work-life balance.

Responses also confirmed that the research culture disadvantages and discourages under-represented groups, including women. Almost two thirds of the respondents to the survey were women and only 9% remain as researchers (ranging from 18% in panel B to 7% in panel A); less than half the proportion of men in research roles outside HE. However, similar proportions of women and men (two-fifths) remain in research-related roles.

Female respondents are significantly more likely to want better work-life balance in their career than men. 66% of women compared with 47% of men state this as reason for leaving HE research. Women are also twice as likely to comment on feeling the loss of status/self-image on leaving HE research than male research staff. Similarly, female respondents are twice as likely to comment on the difficulties in deciding whether to leave HE research and what to do.

Institutions can take actions to provide a better working environment for their current research staff and to facilitate the successful transition of those that move on to other occupations.

Commit to achieving and maintaining the HR Excellence in Research Award. This Award ¹⁰ recognises progress in implementing the principles of the European Charter and Code ¹¹ and the Concordat to Support the Career Development of Researchers ¹² in the UK. These aim to improve the working environment for researchers and the attractiveness of research careers through institutional action plans.

Introduce a talent management strategy. Overall, the former research staff who responded to the survey are highly talented researchers: three quarters have published as a first author and a quarter has secured competitive grant funding. A quarter had been awarded an ERC grant/fellowship or other fellowship. Three quarters of respondents aspired to an academic career, but left HR research for a range of generally negative reasons: less than 18% would go back in to HE. Although there is an oversupply of research staff in relation to the numbers of academic positions, institutions still need active talent management programmes to ensure that they are recruiting and retaining the most highly talented researchers. This should include opportunities for bridging funds and flexible working.

Develop gender equality plans. Female respondents disproportionately report that they left HE research due to the lack of job security, fixed term contracts and poor work-life balance. However, increased diversity within research teams correlates positively with higher research performance. Institutions should develop gender equality plans ¹³ (or the UK Athena SWAN Charter ¹⁴) that address some of the systemic issues that disadvantage women in HE research and provide equality of opportunity for all, particularly the progression of female researchers into senior positions.

Provide career development support for research staff. Former research staff who have made successful transitions highlight the usefulness of the following support:

- gaining experience of other environments through work shadowing, internships, volunteering, etc.
- access to emotional support structures, such as provided in redundancy counselling, including peer-to-peer support
- mentoring and coaching services
- learning about different careers from former research staff
- clarity on the possibility of sustaining their research interest, e.g. returning to academia, the value of maintaining links to academia, etc.

Use your research staff alumni. Former research staff who responded to the survey felt strongly about their experiences and realise that many current research staff are going through similar challenges in deciding on their future career paths.

10. HR Excellence in Research Award <http://ec.europa.eu/euraxess/index.cfm/rights/index>

11. European Charter and Code <http://ec.europa.eu/euraxess/index.cfm/rights/europeanCharter>

12. Concordat to Support the Career Development of Researchers www.vitae.ac.uk/concordat

13. Gender-Net promoting gender equality in research institutions www.gender-net.eu

14. The Athena SWAN Charter recognises the advancement of gender equality: representation, progression and success for all. www.ecu.ac.uk/equality-charters/athena-swan/

Many of the respondents wanted to share these experiences with other research staff so they could benefit from their experiences. Institutions should capitalise on this willingness of their research staff alumni to help inform current research staff of their broader career opportunities and how best to manage the transition to other occupations. This could be through collecting case studies, bringing former research staff in to talk with current research staff, or setting up a mentoring system.

Manage and recognise career aspirations Research staff in HE overwhelmingly aspire to academic careers. The low levels of aspirations for other careers stem from a lack of knowledge of other opportunities and an environment (and language) that reinforces that the first and best choice is an academic career: anything else is perceived as a second choice or 'failure'. This undermining of the value of other careers increases the challenge for research staff to consider other options constructively and the potential emotional stress. Appraisals, performance reviews and career development interviews should be used to have constructive conversations about career aspirations and the wide range of career opportunities in a 'career neutral' language.

'Being told at 27 that I was too old to move outside and no one would hire me.'

'People also seemed to take it personally, as though by deciding to leave academia I was basically saying that their jobs were rubbish.'

'Worrying whether I had made the right choice and feeling that those still in academia would look down on me.'



'What do research staff do next?' was done in partnership with the following organisations

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Vitae

Vitae, is an international programme led and managed by CRAC, a not-for-profit registered UK charity dedicated to active career learning and development. Working in the UK since 1968, when we ran our first project to support transitions of doctoral researchers to industry, Vitae has great expertise at enhancing the skills and career impact of researchers locally, within a global context.

We work in partnership with UK and international higher education institutions, research organisations, funders, and national bodies to meet society's need for high-level skills and innovation.

Vitae aims:

- Influence effective policy development and implementation relating to researcher development to build human capital
- Enhance higher education provision to train and develop researchers
- Empower researchers to make an impact in their careers
- Evidence the impact of professional and career development for researchers

Vitae and its membership programme is managed by
The Careers Research and Advisory Centre (CRAC) Limited.

Further information on our activities with HEIs, researchers and employers may be found on this website:

www.vitae.ac.uk

ISBN: 978-1-906774-58-5