QUEENSLAND
UNIVERSITIES

HDR EMPLOYABILITY GUIDE 2: GUIDE TO THE HDR JOB MARKET

2019

HIGHER DEGREE BY RESEARCH EMPLOYABILITY GUIDE 2: GUIDE TO THE HDR JOB MARKET

Guide 1 explored the broader issues relating to employability such as the impact of global trends on the world of work and the key employability skills to consider now and for the future. This Guide focuses on the HDR job market and how you can best position yourself for your future career.

One of the biggest challenges in understanding the HDR job market is the lack of available data on HDR career outcomes. On the positive side this means HDRs do not need to be constrained by pre-conceived ideas about 'suitable' roles for future employment. Thus, use the information in this Guide as a springboard for generating career ideas.

The doctoral employment landscape

Over the last couple of decades governments across the world—including Australia—have invested heavily in research training as it is viewed as a key driver of economic growth and innovation. This investment has led to a large increase in the number of PhD graduates in Australia and worldwide (56% from 2000 to 2012) who are seeking employment (Organisation for Economic Co-operation and Development (OECD), 2014).

Within the workforce, doctorate holders made up more than 1% of the working age population (25 – 64 years) in approximately one-third of OECD countries in 2016 (OECD, 2017). There are wide variations in the number of doctoral graduates in the workforce, with estimates ranging from less than 1% in the United Kingdom to 6% in Switzerland. Australia—like other nations—has had an increase in the number of doctorate holders in the working age population, from 0.7% in 2006 to approximately 1.2% in 2016. Although specific data for Asian countries was not available for inclusion in this Guide, it is often reported that countries such as China and Japan are increasingly employing doctoral graduates. This means if you are able to have a global perspective in your job search, you may be able to take advantage of the growing opportunities internationally.

The positive news is that employment statistics indicate over 93% of doctorate holders in Australia and elsewhere are employed (Graduate Careers Australia, 2016; OECD, 2017). So, what are the job destinations for HDRs?

HDR job destinations

There is limited data about job destinations of doctorate holders, but roles are typically referred to as either *academic* or *non-academic*. Data for both short-term (upon graduation) and longer-term (approximately 5-10 years after graduation) employment suggests the majority of Australian doctorate holders are employed in non-academic positions[2]. According to Australian 2011 census data (which surveys the entire population), approximately 25% of all doctorate holders work in the tertiary education sector—the largest single employer of doctorate holders (McGagh et al., 2016). However, this means that approximately 75% work in non-academic roles.

This is broadly consistent with global trends, where just under half of doctorate holders are employed in university roles. The European Research Foundation 2017 Career Tracking Survey of Doctorate Holders estimated 47% of recent European doctorate graduates were employed in universities. So, while many HDR candidates aspire to an academic career, the reality is that non-academic employment is most likely.

---

[1] Calculated from OECD data: Doctorate holders in the working age population, 2009 and Doctorate holders in the working age population, 2016.

[2] For example, see Graduate Careers Australia (GCA), 2016 and McGagh et al., 2016.

Let's look at some issues impacting environments in which doctoral graduates are employed and what you can do to optimise your employability.

The academic sector

Although many PhD graduates will end up in non-academic careers, the higher education sector remains the largest single employer of Australian PhD graduates (Office for Teaching and Learning, 2017). Of the postgraduate researchers who remained in the academic environment, the majority were employed in sessional, contract or casual positions upon completion of their degree—as the availability of permanent positions declined over the past 10 years (GCA, 2016). This trend is expected to continue with the academic workforce becoming more contract-based.

While there are some research-only and teaching-only roles, most academic positions comprise three components:

1. Research.
2. Teaching.
3. Service or engagement.

Thus, developing skills in these areas is important if you are seeking an academic role.

Prospects for academic career progression can be limited. The Scientific Century report from the Royal Society in the UK estimates that fewer than 1% of all PhD holders (which includes those working in non-academic environments) will reach professor level over the duration of their career.

Jobs in the academic sector

As a PhD or Research Masters was traditionally viewed as training for a career in academia (McAlpine, 2014) you are likely aware of roles such as 'Level B Academic', 'Postdoctoral Research' positions and—in some cases—teaching-only positions. In addition to these roles there are many professional positions such as grant writer; curriculum designer and project co-ordinator—which are suited to HDR-qualified candidates.

Use the following websites to read about academic and professional roles in universities in Australia and globally:

- Uni roles.
- The Conversation Job Board.
- Times Higher Education unijobs.

Activity 2.1

As you search for jobs in the academic sector, take note of the requirements you currently meet—as well as those you still need to develop for the positions you are interested in applying for, post-PhD.

Position	Requirements I have	What I need to develop
Secretariat Officer	• Writing experience • Attention to detail	• Budgeting
Level B Academic	• Research degree • Committee experience	• Tutoring/teaching skills

Research and development (R&D) sector

The R&D sector presents opportunities for postgraduate candidates from all disciplines. This sector encompasses research-intensive organisations such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Cooperative Research Centres (CRCs—joint university and private sector research centres)—and smaller companies such as biotechnology start-ups and research consultancies.

Unfortunately, R&D funding in Australia has been falling in recent years. OECD figures show the gross expenditure on R&D as a percentage of gross domestic product (GDP) fell from 2.11% in 2013-14 to 1.88% in 2015-16. This is lower than the OECD average of 2.38%. In contrast, R&D spending has increased in other countries such as Korea and China (see the OECD's Gross domestic spending on R&D interactive resources) which will have a positive effect on the R&D job market in those countries. So again, taking a global approach to searching for R&D positions is useful!

There are some long-running initiatives in Australia such as the R&D tax incentives that have been taken up by businesses to help offset costs related to undertaking R&D activities. Additionally, there has been an increase in initiatives to bolster this sector after a recent government report[3] revealed Australia had the lowest rate of industry-researcher collaboration in the OECD; and a much lower proportion of researchers employed in business than many other OECD countries. For example, the CSIRO Innovation Fund—launched in 2016—provided $200 million to invest in startups; spin-off companies and small and medium-sized enterprises (SMEs) engaged in the translation of research generated in the publicly-funded research sector—such as CSIRO and universities. These initiatives are also expected to have positive flow-on effects such as increased job availability.

Jobs in the R&D sector

Roles in R&D span a wide range of industries including the scientific; medical; engineering; water resources; aged care; food production and financial sectors. Positions suitable for HDR graduates include research-specific positions; project and product development roles; technical and data-focused roles and administrative/managerial roles. There are also associated positions such as patent lawyers and intellectual property experts who contribute to this sector.

Sites such as ResearchCareer; R&D Startups and sites for individual R&D organisations such as CSIRO Careers will help you to discover the range of roles available in the R&D sector. As you browse you may notice many of the jobs do not have the word 'research' in the title. However, quite often the skills used are those you are developing in your research degree.

---

[3] The National Innovation and Science Agenda Report (Commonwealth of Australia Department of the Prime Minister and Cabinet, 2015).

Activity 2.2

As you browse the sites listed (and others) for jobs in the R&D sector, note down any positions that tweak your interest. Identify what it is about the job that interests you along with steps you could take to maximise your chance of employment for that job.

Position/Organisation	What interests me	Steps I can take
Commercialisation manager / CSIRO	Creating industry partnerships for cutting-edge research	◆ Register for CSIRO email alerts ◆ Attend industry events to practice communication skills

Non-academic employment

The term 'non-academic employers' encompasses any employer that is not a university! Thus, the non-academic job market is varied and includes local, state and federal governments; large and small private and public sector companies; private education providers; not-for-profits; consultancies; self-employment and the 'gig' economy—as discussed in Guide 1. Non-academic jobs can also include non-academic roles within universities such as those held by the people working in your graduate research school (many of whom have a doctorate degree).

Seeking a career outside academia may seem daunting. It might mean embarking on a new field of research; using your research skills in new ways; or not doing research at all. Perhaps you aren't even sure where to look to find these jobs! However, it's not as difficult as HDR students often perceive it to be.

Many of the skills required in the non-academic workforce are actually quite similar to the academic and discipline-specific skills you develop during your research training—however, you may need to use your research skills to understand the different terminology used by universities, government and industry to describe roles, duties and selection criteria. For example, *tutoring* (university) may be described as *training* (industry). You can then modify your language for job searches accordingly to find suitable roles.

Additionally, you will find you have developed many transferable skills during your HDR degree. For example, time management and project management skills are highly valued in both the academic and non-academic workforce; and these are critical for HDR students! Identifying your skills and demonstrating your employability using appropriate terminology are covered in Guides 3 and 6, respectively.

Jobs in the
non-academic sector

The range of HDR relevant positions available in the non-academic sector is huge! A [recent Australian research project](#) analysed all jobs on seek.com.au that aligned with the HDR skill set and found there were suitable jobs for HDR graduates in *all* industries (Mewburn, Suominen, & Grant, 2017).

However, like many positions in the R&D sector most non-academic job titles—including research-related jobs—do not contain the word 'research'. Job titles may instead include information analyst; data manager; knowledge producer/manager; communication specialist/manager; scientific officer; policy officer; statistician; consultant; project manager/designer/coordinator; middle-management roles and more. Additionally, duties provided in position descriptions might also exclude the word 'research' but may instead include: examine, analyse, investigate and so on. Thus, building a search with terms other than 'research' when completing a job search will open up these options.

Activity 2.3

Conduct a job search in the non-academic sector using [Seek](#) or [Jora](#). Use three keywords (not including research) and hit search.

Search terms	Job title/Organisation	Job overview
Information, history, analysis (Jora.com.au 8/2/2019)	◆ Historical data analyst ◆ Visual communicator	◆ Exploring data trends ◆ Presenting research findings visually for varied audiences

Remember, rather than having one fixed career goal it is important to keep your options open and explore several career pathways, both in Australia and globally if possible. Start by considering careers within your current environment and then expanding beyond.

As well as your individual actions, there are steps being taken at the broader level to enhance HDR career prospects. Following the findings of several reports—most notably the Australian Council of Learned Academies (ACOLA) Review of Australia's research training system—government and universities/institutions are currently working to improve HDR employability by putting in place funding and developing infrastructure and programs such as:

- incentivising industry-university collaboration and industry-based PhDs
- developing a structured, national scheme to support industry placements and internships for HDRs
- collecting longitudinal data to better understand the HDR training experience, longer-term career outcomes, and beneficial supports and activities (McGagh et al., 2016).

The Australian Government Department of Education lists some initiatives to enhance the professional development of research students.

Additionally, individual universities are expanding their HDR-specific training, professional development and career support to enhance HDR employability. Making use of these opportunities during your degree will assist you to develop a positive career future.

What does this all mean for me?

It is up to each of us to take responsibility for developing our career future. Be proactive during your research training by keeping abreast of the employment landscape (Guide 1); widening your skill set (Guide 3); making connections with those in fields you wish to pursue (Guides 4 and 5) and considering how the roles and activities you undertake might be used in the future to demonstrate your employability (Guide 6).

People who are successful in the job market are *flexible and open to new opportunities* rather than focussed on one single direction. Even if you are aiming for an academic career it is valuable to explore non-academic careers to keep your options open.

As you read about a variety of career options, you will (hopefully) become aware that many of the skills you develop during your research training (such as data management) are transferable to other areas. However, you may need to hone or adapt those skills so you can apply them in different contexts or across different industries. Taking data management as an example, data lifecycle models; data tools; policies and procedures differ across academic, government and industry sectors.

The information on the HDR job market may seem daunting—however, the jobs are out there! They may not be in obvious places so you will need to use your research skills to look broadly at a range of options. You may also need to leave your specific research topic behind and consider embracing new fields of research that may be similar or vastly different.

You may be excited to start something new, but it can also be hard to think about saying goodbye to the research topic that has been your primary focus for so long! To make this easier, start viewing your research as a project—you are working on a specific task for a defined period using and developing skills to solve a problem. Once it is finished you can take the skills and knowledge with you to apply to new ventures. Also remember that working *in* academia doesn't necessarily mean continuing with your research topic; and working *outside* of academia doesn't necessarily mean leaving your research topic behind.

What can I do now?

Your research training is the ideal time to start preparing for your career. View career-related activities (professional development) as *part* of your training rather than in competition with it.

- Gather information about a variety of career pathways and read career stories. These sites are a good start:
  - The Conversation: There's work (and life) outside of universities for PhD graduates.
  - RDF Vitae: Researcher Career Stories (insight into a range of academic and non-academic careers, requires institutional email login).
  - Passionate PhDs podcast.
- Conduct searches in all employment sectors to keep abreast of changing trends and identify potential future employers.
- Develop an understanding of salary expectations by reading job advertisements and using sites such as Payscale.
- Access the 'hidden job market' as the majority of jobs are filled without ever being advertised:
  - Develop professional connections—Guide 5 will help with this.
  - Identify organisations in which you would like to work; attend industry events; join your professional association; use LinkedIn and so on.
  - See these links: What is the hidden job market? and The hidden job market for further details and tips.
- Brainstorm people and organisations that may align with your research topic or your skill set. Monitor their LinkedIn profiles and websites, and make contact when appropriate (Guide 5).
- Contact recruitment agencies. Let them know your skills and interests so they can consider you for suitable roles.

- Keep up-to-date with current Australian Research Council (ARC) science and research priorities and National Health and Medical Research Council (NHMRC) research priorities as a guide to the sectors and organisations where there may be employment opportunities.
- Seek opportunities for skills development including participating in workshops and training offered by your university—your university library and graduate research school are good starting points. Read the emails they send regarding training.
- Consider undertaking an internship or work placement. Employers view internships as the best form of training for work (Deloitte Access Economics, 2014; Quacquarelli Symonds, 2018). However, not just any internship—it needs to be of reasonable duration and in a relevant industry (Deloitte Access Economics, 2014).
- Above all else, be proactive!

Stretch activity

Identify people who work in each of the different career sectors. Contact them to conduct an information interview. Ask them:

- What do you like about your role?
- What are the challenges in your role?
- What advice would you give to someone interested in working in this area?

Additional HDR career resources

Academic/research	Non-academic
◆ Vitae: Career management for researchers ◆ Global Academy Jobs ◆ Jobs at CSIRO ◆ HigherEdJobs ◆ Times Higher Education unijobs ◆ FindAPostdoc.com ◆ jobs.ac.uk ◆ ResearchCareer ◆ R&D Startups ◆ The Conversation	◆ Cheeky Scientist ◆ Beyond the Professoriate (requires paid subscription) ◆ FindAPhD.com: Non-academic Careers for PhD Holders ◆ PhDs at Work ◆ The Versatile PhD ◆ Twitter e.g. @AcademicEQ and @ProfessorIsIn ◆ Jora Australia ◆ PostAc (full site will be launched in 2019, may require payment to access)

Internship links

Australian/for HDRs	International/not HDR-specific
◆ Australian Technology Network (ATN): Industry Doctoral Training Centre (IDTC) ◆ APRIntern (Australian, short-term industry and research placements for HDR's in all disciplines) ◆ Advance Queensland PhD Industry Experience Program	◆ OECD internship programme ◆ WHO internship programme ◆ Scholarship AINSE ANSTO French Embassy (SAAFE) Research Internship Program

References

Commonwealth of Australia Department of the Prime Minister and Cabinet. (2015). *National Innovation and Science Agenda*. Retrieved from https://www.industry.gov.au/sites/g/files/net3906/f/July%202018/document/pdf/national-innovation-and-science-agenda-report.pdf.

Deloitte Access Economics. (2014). *Australia's STEM workforce: A survey of employers*. Retrieved from https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-australia-stem-workforce-report-010515.pdf.

Department of Education. (2014). *Initiatives to enhance the professional development of research students*. Retrieved from https://docs.education.gov.au/system/files/doc/other/initiatives_to_enhance_the_prof_development_of_research_students_0.pdf.

European Science Foundation. (2017). *2017 Career tracking survey of doctorate holders.* Retrieved from http://www.esf.org/fileadmin/user_upload/esf/F-FINAL-Career_Tracking_Survey_2017__Project_Report.pdf.

Graduate Careers Australia (GCA). (2016). *Postgraduate destinations 2015*. Retrieved from https://www.graduatecareers.com.au/files/wp-content/uploads/2016/07/graduate-destinations-report-2015-final1.pdf.

McAlpine, L. (2014). Post-PhD trajectories: Desperately seeking careers? *Higher Education Review*, 47(1), 4-35.

McGagh, J., Marsh, H., Western, M., Thomas, P., Hastings, A., Mihailova, M., & Wenham, M. (2016). *Review of Australia's research training system. Report for the Australian Council of Learned Academies*. Retrieved from https://acola.org.au/wp/PDF/SAF13/SAF13%20RTS%20report.pdf.

Mewburn, I., Suominen, H., & Grant, W. (2017). *Tracking trends in industry demand for Australia's advanced research workforce*. Retrieved from Australian National Centre for the Public Awareness of Science, ANU.

Office for Teaching and Learning. (2017). *Reframing the PhD for Australia's future universities*. Retrieved from http://reframingphd.com.au/.

Organisation for Economic Co-operation and Development (OECD). (2014). Who are the doctorate holders and where to their qualifications lead them? No. 25. *Education indicators in focus*. Retrieved from https://www.oecd-ilibrary.org/docserver/5jxv8xsvp1g2-en.pdf?expires=1549237276&id=id&accname=guest&checksum=E0A31AB485A9B1A8AAC713B72C2FB509.

Organisation for Economic Cooperation and Development (OECD). (2017). *OECD Science, technology and industry scoreboard 2017: The digital transformation*. Retrieved from http://dx.doi.org/10.1787/9789264268821-en.

Quacquarelli Symonds (QS). (2018). *The global graduate skills gap in the 21st century*. Retrieved from http://www.qs.com/portfolio-items/the-global-skills-gap-in-the-21st-century/.

The Royal Society. (2010). *The scientific century: Securing our future prosperity*. Retrieved from https://royalsociety.org/~/media/Royal_Society_Content/policy/publications/2010/4294970126.pdf.

Higher Degree by Research (HDR) Experience and Employability Project partners: