# 18 Months In

## Exploring the impact of the Covid-19 pandemic on Australia's research workforce

Australia's research workforce has gone through a tough 18 months. Since the Covid-19 pandemic hit in early 2020, we've seen significant academic job losses, major changes to teaching practices, and a highly uncertain workforce horizon.

**But more data is needed to properly understand these changes.**

**In this brief update we present data showing the impact of the Covid-19 pandemic on the research labour market both inside and outside the Australian higher education sector.**

By better understanding research labour force trends, we hope that students, educators and key decision makers can better plan for the future, and work towards a better fit between the higher education sector and Australia's other users of highly skilled researchers.

## Inside the higher education sector

### Job losses

Previous research has shown significant job losses inside the higher education sector due to the Covid-19 pandemic. In October 2020 the National Tertiary Education Union showed 12,185 positions had been lost in Australian universities. Of these, some 5,300 were continuing positions; 6,486 were casual and 399 fixed term positions.[1]

Yet to date, we have seen little detail on the disciplines most affected by the pandemic, and what the workforce recovery might look like. Our analysis bridges this gap.

### Fewer ads

Comparing academic job advertisements from 2019, 2020 and the first half of 2021 reveals both the impact of the pandemic, and the movement towards recovery. In particular, after an average of 1,022 academic roles were advertised in the Australian Higher Education sector each month in 2019, the academic job market bottomed out at just 290 roles advertised in April 2020. This was just 26% of the figure the previous April.

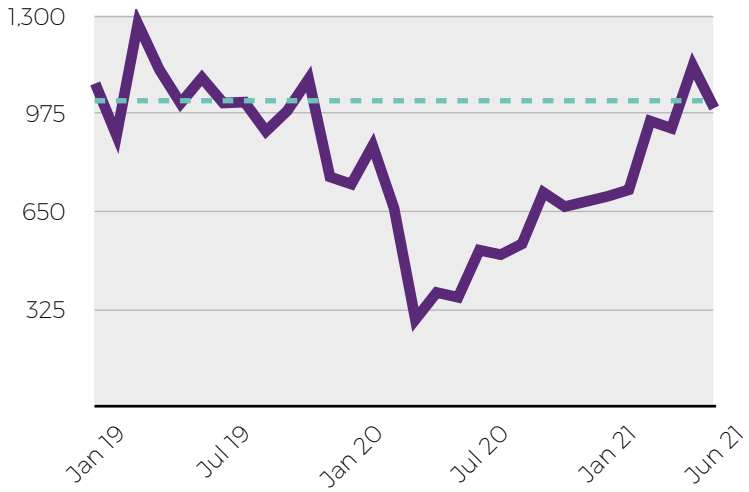


Figure 1: Total academic jobs advertised by month, 2019 - June 2021. The dashed line shows the 2019 monthly average of 1,022 job ads

### But a recovery beckons

Happily, the contraction proved short lived. As Figure 1 shows, by June 2021 academic job postings have reached 91% of their June 2019 levels (994 in June 2021 vs 1,095 in June 2019).

While these advertisements don't cover the job losses noted above, they do indicate a path toward recovery.

### By discipline

Our analysis also explores the academic disciplines most affected by the pandemic. Table 1 shows here particular impacts on Built Environment, Creative Arts, Economics, History and Heritage, and Philosophy & Studies of Religion.

Areas showing strongest recovery - or continued growth - in 2021 include Agriculture, Built Environment, Creative Arts, Economics, History & Heritage, and Language, Communication & Culture.

## Outside the higher education sector

Importantly, the higher education sector is not the only employer of skilled researchers in Australia.

[1] https://www.nteu.org.au/covid-19/article/The-jobs-apocalypse.-It%27s-happening-now%21-%28Sentry%2C-Oct-2020%29-22388

Around 60% of Australia's PhD graduates find work outside academia on graduation.[2] Indeed, despite difficulties of matching candidates with jobs, there exists a wealth of jobs in the wider landscape suitable for skilled researchers.[3]

Using our unique PostAc® algorithm we have been able to identify not only suitable non-academic jobs for highly skilled researchers, but track the trends in demand.

## A similar decline

Our data, shown in Figure 2, shows a similar collapse in job advertisements in 2020. From an average of 15,205 advertisements calling for highly skilled researchers each month in 2019, the market collapsed to a low of just 6,405 jobs in April 2020.

## But an even stronger recovery

But by February 2021, the non-academic market for highly skilled researchers was back to the 2019 average, and has continued to grow since. June 2021 saw 22 thousand relevant jobs, 45% above the 2019 average. Particularly rapidly growing industries include supermarket and grocery stores (up 194% on pre-Covid baseline), insurance (161%), social assistance (154%) and scientific research services (164%).

# Our data

This analysis is based on job advertisement data provided by Burning Glass Technologies.

Our initial pool included 2 million jobs advertised in Australia, which we then processed using a series of Machine Learning and Natural Language Processing algorithms: firstly to sort jobs by research skills intensity,[4] then to sort into academic and non-academic research jobs, and finally to sort into different academic jobs and disciplines.[5]

We used this data to build the unique research job search engine PostAc®, which connects researchers with great research jobs outside academia. Find out more at thesiswhisperer.com/postac/, or launching soon at postac.com.au, or postac@anu.edu.au

This report by PostAc®. Authors Will Grant, Inger Mewburn, Hanna Suominen, Ran Cui, Li'An Chen, Chenchen Xu.

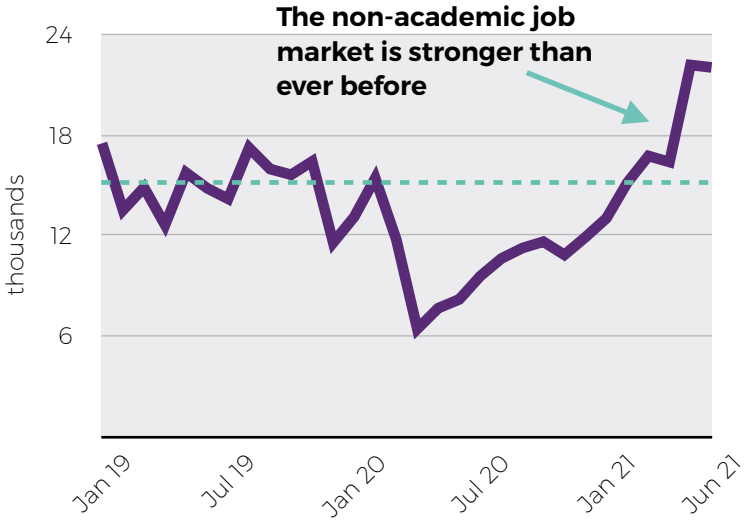


Figure 2: Total non-academic jobs (in thousands) calling for High Research Skills advertised by month, 2019 - June 2021. The dashed line shows the 2019 average of 15205 job ads.

| | 2019 | 2020 | Covid impact | To June 2021 | Recovery |
|---|---|---|---|---|---|
| Agriculture | 376 | 196 | 52% | 251 | **134%** |
| Biological sciences | 538 | 379 | **70%** | 258 | 96% |
| Biomedical sciences | 1729 | 1059 | 61% | 783 | 91% |
| Built environment | 451 | 171 | **38%** | 182 | 81% |
| Chemical sciences | 116 | 84 | **72%** | 39 | **67%** |
| Commerce & management | 1011 | 433 | 43% | 358 | 71% |
| Creative art | 349 | 107 | **31%** | 160 | 92% |
| Earth science | 111 | 50 | 45% | 46 | 83% |
| Economics | 142 | 54 | **38%** | 55 | 77% |
| Education | 804 | 341 | 42% | 330 | 82% |
| Engineering | 761 | 483 | 63% | 309 | 81% |
| Environment | 308 | 208 | 68% | 167 | **108%** |
| Health science | 1821 | 1214 | 67% | 909 | 100% |
| History & heritage | 54 | 17 | **31%** | 23 | 85% |
| Human society | 612 | 336 | 55% | 283 | 92% |
| Indigenous studies | 283 | 216 | **76%** | 186 | **131%** |
| Information technology | 724 | 412 | 57% | 231 | **64%** |
| Language communication & culture | 218 | 99 | 45% | 126 | **116%** |
| Law & legal | 198 | 105 | 53% | 97 | 98% |
| Mathematical sciences | 410 | 286 | 70% | 148 | 72% |
| Philosophy & religion | 24 | 6 | **25%** | 6 | **50%** |
| Physical sciences | 318 | 245 | **77%** | 126 | 79% |
| Psychology | 418 | 208 | 50% | 149 | 71% |

Table 1: Covid impact by discipline. Impact compares 2020 with 2019; Recovery compares to June 2021 pro-rata with 2019. Particularly strong contractions shown in red, mild retractions or strong recoveries in green.

[2] McGagh et al. in Securing Australia's future: review of Australia's research training system. https://acola.org.au/wp/PDF/SAF13/SAF13%20RTS%20report.pdf

[3] Mewburn, I. Grant, W. Suominen, H. Kizimchuk, S. Higher Education Policy 2018 'A machine learning analysis of the non-academic employment opportunities for PhD candidates in Australia' Higher Education Policy. https://link.springer.com/article/10.1057/s41307-018-0098-4

[4] https://aclanthology.org/P19-3008/

[5] Note, this doesn't necessarily include casual jobs, which may not be advertised using the same processes.