

## How employable are South Africa's doctoral graduates?

### Background

Doctoral education and training in any country is a lengthy and costly process. It is therefore imperative that policy makers (including funding agencies) are informed about the return on such a (public) investment. Graduate destination studies, or tracer studies, offer invaluable information about the contribution of the doctorate to a country's knowledge production system and the socio-economic impact of doctoral training. Such studies, however, are particularly difficult to do especially where a national graduate database is lacking. Funded by the Department of Science and Innovation (DSI) and managed by the Water Research Commission (WRC), SciSTIP undertook the first national tracer study of doctoral graduates in South Africa with the aim to *trace the mobility, career paths and other attributes of a representative sample of PhD graduates from South African universities across a range of sectors and disciplines.*

### *A national tracer study of doctoral graduates*

The primary goal of the study was to trace the career paths of doctoral graduates who obtained their qualification from a South African university over the last two decades. A web survey with more than 6 400 completed questionnaires were produced and for the, for the first time, provide accurate, precise and generalisable information on a wide variety of issues: the employability of SA doctoral graduates, the financing of doctoral studies, the differences in the career trajectories between full-time and part-time studying students, the peculiar challenges facing post-doctoral fellows, the absorptive capacity of different employment sectors, the geographic mobility of these graduates as well as new insights into the perceived value and utility of pursuing doctoral studies. In this SciByte we address the question of *how employable are South Africa's doctoral graduates?*

### *Employment status of graduates during their doctoral studies*

**A first and important finding is that the majority (61%) of doctoral students in South Africa study part-time.** This means that they are enrolled for their doctoral studies whilst being employed – either by working for an employer in the public or private sector or being self-employed. Conversely, only 40% of all doctoral students study full-time – the majority of whom are in the natural and life sciences. Based on previous studies conducted by CREST, we have find the same ratio of part-time to full-time students (60:40) which suggests that this is a structural feature of the South African doctoral system.

Disaggregation of the results shows that the percentages of students studying full-time or part-time differ significantly by scientific domain/fields with students in the STEM fields more likely to study full-time than students

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in the social sciences and humanities (SSH). The differences in the employment status of students in the STEM vs SSH fields are, in turn, linked to the age of the students: the youngest sub-group of doctoral students are full-time students in the STEM fields; the oldest group at graduation are part-time doctoral students in Education. Further disaggregation by main science domains reveal huge differences in the proportion of full-time to part-time students (figure below).

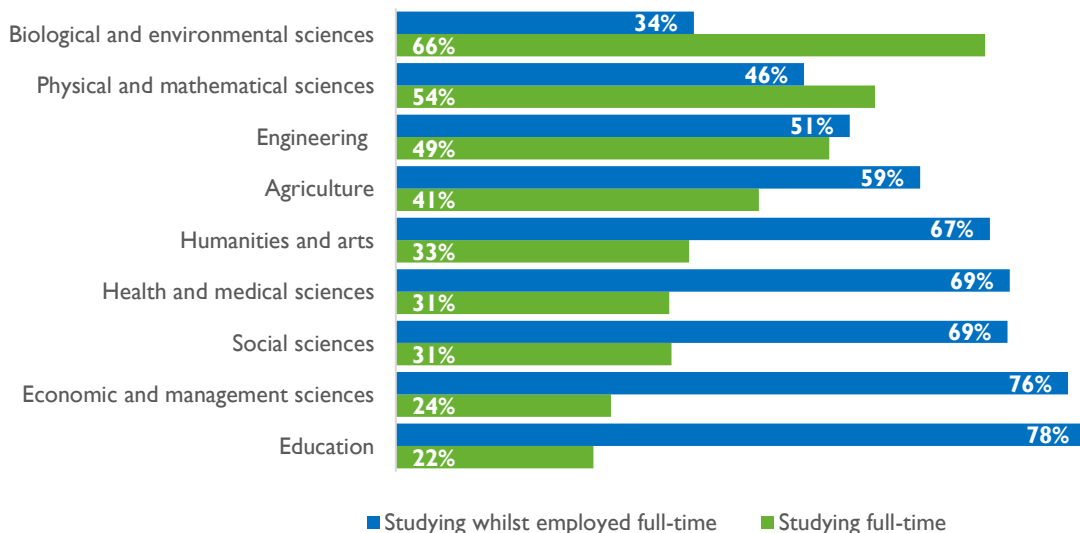


Figure 1 Employment status of doctoral graduates during their doctoral studies by disciplinary field

Looking at the nationality of respondents during their doctoral studies we find that respondents from the rest of Africa are more likely to study full-time. Nearly 60% (n = 871) of graduates from these countries indicated that they were not employed while enrolled for the PhD and hence studied full-time. This compares to 31% (n = 1 217) of South African nationals and 45% (n = 87) of graduates from elsewhere in the world who indicated that they studied full-time.

### On finding employment after graduating

The majority of South Africa’s doctoral graduates over the past twenty year has remained with the same employer after obtaining their doctorates. This is again not surprising if one keeps in mind that about 60% of all doctoral students in the country were already employed when they enrolled for doctoral studies. It is also worth noting that a substantial number of students (20%) indicated that they accepted a postdoctoral fellowship on completion of their studies. A key finding of our study is that **only 2 to 3% indicated that they could not find employment after completing their doctoral degree.**

Further elaboration on the different flows or pathways of full-time and part-time students after graduation and where they found employment is provided in the Sankey diagram below (figure 2).

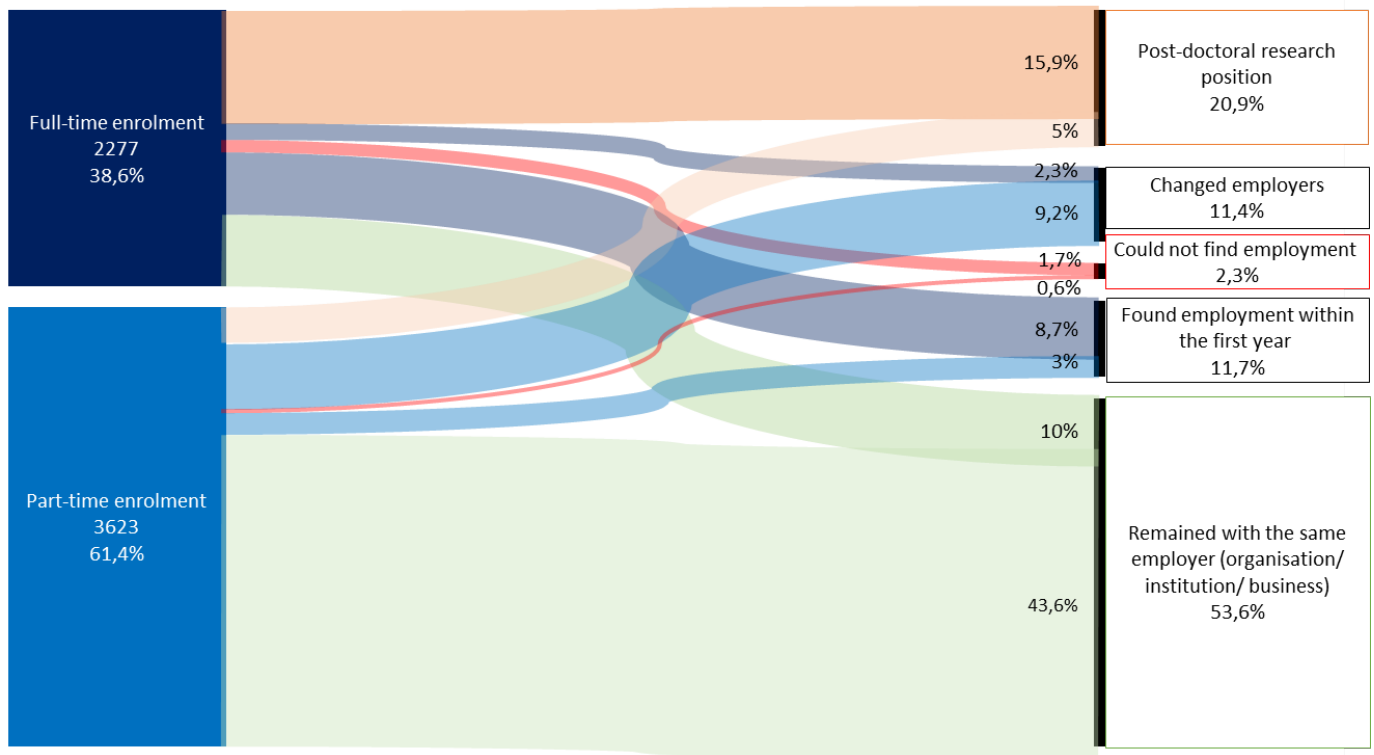


Figure 2 Employment status within the first year of graduation

The two blocks in the left column of the diagram (dark and light blue blocks respectively) show the distribution of our sample by enrolment status **during their doctoral studies**: 39% of respondents studied full-time compared to 61% who were employed full-time while studying. The coloured flow bands show the proportional share of either full-time or part-time respondents who (1) accepted a postdoctoral fellowship, (2) changed employers, (3) could not find employment, (4) found employment in the first year, and (5) remained with the same employer/organisation/institution.

The employment status of respondents **in the year following completion of their doctoral studies** is illustrated in the blocks on the right side of the diagram. By way of example: the broad orange band indicates that 15.9% of the total sample studied full-time and accepted a postdoctoral fellowship within the first year after completing their studies. In addition, a further 5% of the total sample who were employed while studying managed to be offered a postdoctoral fellowship after graduation. This means that 21% of our graduates over the past twenty years managing to secure post-doctoral fellowships after graduation. As figure 2 shows, however, the single biggest group of graduates (53.6%) found employment in academia, most of whom were already employed in the sector whilst pursuing their doctoral studies.

### **Current employment and field of doctoral expertise: A good fit?**

The results discussed thus far, have shown that the **vast majority of South African doctoral graduates are employable** with a very small percentage (2 to 3%) not finding employment immediately following the completion of their doctoral studies. Being able to quantify the exact percentage of doctoral graduates who are not immediately employable is a major contribution of this study to our understanding of the state and dynamics in the labour market of doctoral graduates in the country.

However it is also necessary to address some of the more qualitative aspects related to employability and employment. When drilling down on this issue, we found that the vast majority (70%) of graduates indicated that they found employment that is directly related to their fields of expertise or training. However, it is also worth noting that nearly one in five (18%) of respondents (n = 901) indicated **that they could not find an employment position related to their field of expertise**. Further disaggregation of the data shows that graduates who received their doctoral degrees in the past five years were even more likely (22%) than those who received their

degrees more than fifteen years ago (13%) to indicate that their current job or position is **not** related to the field of expertise of their doctorate. These results are of concern and pose challenges to policy: even though South African doctoral graduates are successful in finding employment they are increasingly indicating that the employment is not what they expected or wanted.

Disaggregation by science domain shows that graduates in the social sciences and humanities reported more challenges in finding suitable employment compared to graduates in the STEM fields. These findings are also confirmed by the responses to a follow-up question: When asked about their most recent/current employment position, on average slightly more than a quarter of respondents indicated that their current employment position was the only option available. **However, when we disaggregate these responses by the graduation window we see that one third of recent graduates indicated that their employment was the only option available (compared to 20% of graduates who completed their studies 10 to 20 years ago).**

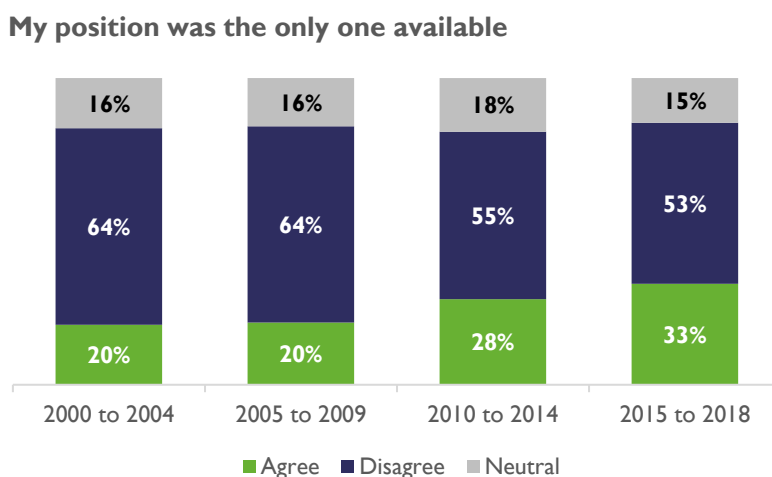


Figure 3 A third of recent graduates reported their current employment position as the only one available

### **The doctoral degree: A good return on investment**

Overall, the vast majority of South Africa’s doctoral graduates expressed satisfaction with their choice to do a PhD. Large majorities (between 80 and 92%) of doctoral graduates indicated that they are satisfied with their decision to pursue a doctoral degree, that their doctorate has been in the right field, that it has turned out to be a good return on investment and that their expectations in obtaining a doctorate have been met.

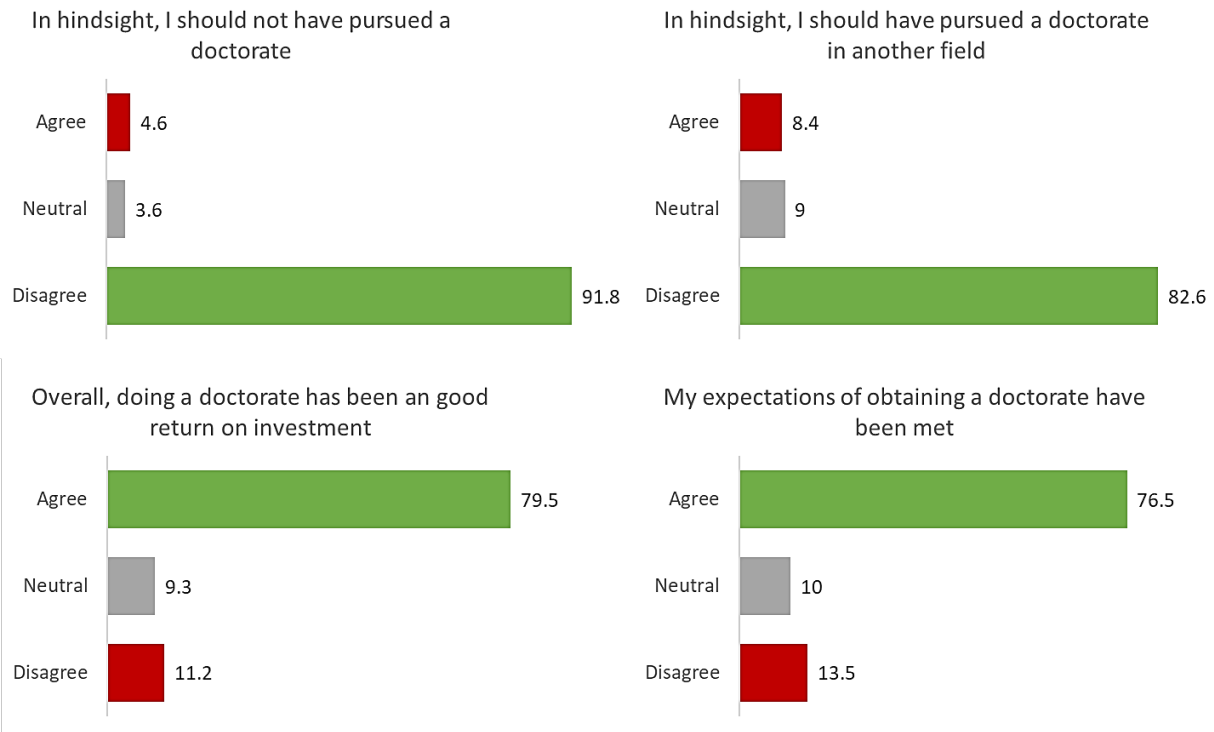


Figure 4 Perceived value of the doctorate

The interviews revealed that individuals decide to undertake PhD degrees for a variety of reasons, mostly related to career advancement. As such, doing a PhD was viewed either as the entrance to a particular career, a stepping stone for upward mobility, and/or a bridge from one career and/or sector to another. Graduates reported that their doctoral degrees had improved their existing stock of knowledge, skills and networks which, in turn, markedly broadening their career prospects or gave them a competitive edge in the labour market. Some interviewees pointed to what might be termed a ‘symbolic’ value of the PhD insofar as it signals to prospective employers and others an expected level of competence or skill set. They also highlighted that having a PhD – and often the title that comes with it – brought with it a certain cachet. All in all, the positive perceptions of others towards the PhD could be leveraged to doctorate-holders’ advantage.

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