

A JOINT CAREER TRACKING SURVEY OF DOCTORATE HOLDERS

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Universities and non-university-based research performing organisations want to better document the career trajectories of doctorate holders in order to analyse practices aimed at the development of research careers. Decision makers and science stakeholders are thereby provided with an evidence base and metrics for analysing research careers. Together with eight European universities and research performing organisations, European Science Foundation (ESF)-SCIENCE CONNECT launched its second career-tracking survey of doctorate holders. The survey, focusing on doctoral graduates of the years 2010 to 2016, was launched in March 2017 and collected more than 2,000 replies, with a response rate of 23%.

BACKGROUND AND OBJECTIVES

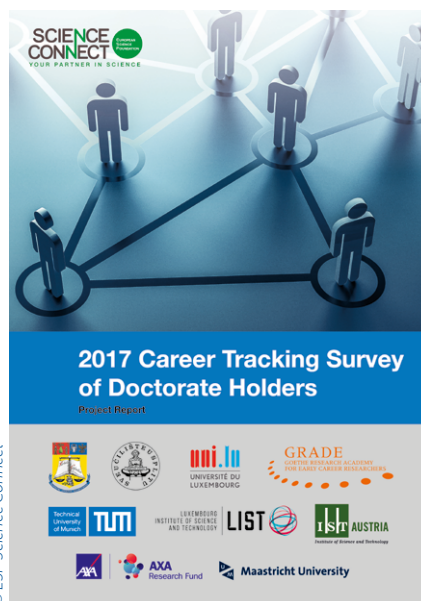
This project built on the work of the ESF Member Organisation Forum “European Alliance on Research Career Development” (EARCD)⁴ and on an ESF pilot study *Career tracking of Doctorate Holders* (2014)⁵ completed in 2015. The aims were to further develop the pilot questionnaire and enable participating organisations to better understand the occupational and mobility patterns as well as satisfaction levels of their doctorate graduates. Participants collected this data for their own monitoring and planning purposes with the intention of improving their doctoral education and career advice. The following universities and organisations joined the consortium: University of Maastricht, Technical University of Munich, Goethe Research Academy for Early Career Researchers (GRADE) at Goethe University Frankfurt, University of Bucharest, University of Split, University of Luxembourg, Institute of Science and Technology, Austria, and the AXA Research Fund, France.

The survey had a “bottom up” methodology which included a strong involvement of participants during the phases of design and implementation. The deliverables provided to each participant included individual reports (with a statistical analysis and an anonymised data set) and a global final report.⁶

MAIN OVERALL OUTCOMES AND CONCLUSIONS

Our findings report a very high employment rate of doctorate holders (95%). A clear majority (80%) are working as researchers. The overall unemployment rate (4%) diminishes over time. Doctorate holders in humanities have, however, a significantly

higher level of unemployment (9%). Doctorate holders experienced a relatively smooth transition into the job market, with 40% of them already having a job at graduation, and those without, on average, having found one within four months. One notices a major difference between academic and non-academic sectors in terms of permanent employment, which indicates a persistent structural problem within academia: only 50% of those working in universities are permanently employed compared to the majority of those working in industry. Sixty per cent of respondents are currently working in the academic field. With the progression of careers and the corresponding search for employment stability, many may leave: nearly 40% of researchers are planning to change to a non-research career in the next three years.



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⁴ European Science Foundation, 2012, *Developing Research Careers In and Beyond Europe: Enabling – Observing – Guiding and Going Global*, a report by the ESF Member Organisation Forum ‘European Alliance on Research Career Development’.

⁵ European Science Foundation, 2014, *Career Tracking of Doctorate Holders: Pilot Project Report*.

⁶ Published in November 2017, the latter can be downloaded at <http://www.esf.org/our-services/career-tracking/career-tracking-of-doctorate-holders-2017/>

While the vast majority of positions in universities/research organisations require a doctorate, or even a post-doctorate, a Master's-level degree is by far most required for those in government, services or healthcare. In industry, equally large shares of respondents (45% each) worked in positions that require a doctorate or a Master's-level degree. This may not necessarily mean that doctorate holders are working in jobs that do not sufficiently utilise their capacities and knowledge: doctorate holders are mostly satisfied with their jobs, with researchers being more content with the intellectual challenge of their position than non-researchers, but less so with job security, salary and work/life balance. At universities, doctorate holders are least satisfied with job security.

In terms of gender issues, not surprisingly, male doctorate holders prevail in natural sciences, engineering and agricultural sciences, and women in medical and health sciences, social sciences and humanities. Similarly, high shares of men and women work as researchers, and similar proportions of men and women work in senior academic posts and other position levels. Women work more often at universities as well as in government and the public sector, while men are significantly more represented in industry and other business sectors. There are no major differences in satisfaction levels or levels of staff management responsibilities.

The reform of doctoral education has been high on European policy agendas for a number of years. It is now widely understood that doctoral students cannot remain narrowly educated within disciplinary boundaries, and with skills geared mainly towards academic teaching and research. The need for training doctoral researchers in professional or transferable skills has been mentioned by EUA,⁷ ESF⁸ and the European Commission.⁹ Looking at our findings we can say that, in general, doctorate holders have acquired the necessary skills for their current jobs during their doctoral research. The only notable discrepancies concerned what can be defined as professional or transferable skills such as communication, networking, or project management.

It appears that doctorate holders looked for a job largely on their own or with the advice of their academic supervisor or peers. That non-researchers – who are mostly concentrated in non-academic sectors – felt less aware of the various career options available for them after graduation, does suggest that there is a need for specific university career services.

The level of geographical mobility was relatively high with 40% having lived in a foreign country for more than three months after graduation. Not surprisingly, the highest amount of mobility happened within Europe, North America being the next most popular destination. Nearly 60% of employed researchers conducted research with researchers based in another country/region, while the level of cross-sectoral collaboration was relatively low in comparison.

CONCLUSIONS AND FUTURE PLANS

The study again demonstrated the feasibility and appropriateness of the selected approach and instrument to study the careers of

diverse groups of doctorate holders in a cross-sectional or longitudinal manner. There is a clear benefit in continuing and scaling up this study in the future, which would allow for the study of larger groups of organisations, and provide more possibilities for continuous benchmarking for participating organisations. ESF-SCIENCE CONNECT will conduct similar surveys with interested universities and other research performing or funding organisations. Universities that wish to consider joining this initiative should write to ctmp@esf.org.

REMARKS AND LESSONS LEARNT BY A PARTICIPANT

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The Technical University of Munich (TUM) has invested considerable efforts to assure the quality of doctoral research and provide career-oriented training for doctoral candidates in the past decade. The TUM Graduate School is the university's central structure for organizing its more than 5,000 doctorates, promoting top-level research, fostering international and interdisciplinary networks and kick-starting the careers of doctoral graduates.

Taking part in the ESF-SCIENCE CONNECT survey as a cooperative effort allowed for multiple discussions and reflections on standards, measures and intended outcomes of doctoral training schemes and career development. The results paint a highly-differentiated picture of graduate careers and enable us to improve targeted support for doctoral candidates. For example, over half of TUM's doctoral alumni work in industry, services, and the public sector. Nevertheless, about 40% of those who leave academia are still engaged in some form of research, implying that training contents need to go beyond simple dichotomies such as "academic" and "non-academic" careers.

It also became obvious to us that, in view of the diversity of doctorates in different European countries and across disciplines, there is a need to further refine the survey methodology and to develop a comprehensive, institution-specific evaluation strategy. Therefore, TUM plans to subsequently install an extended and sustainable monitoring of alumni's careers and engage in continuous benchmarking with partner universities.

⁷ EUA Council for Doctoral Education, 2010, *Salzburg II Recommendations: European universities' achievements since 2005 in implementing the Salzburg principles*, (Brussels, EUA). Retrieved 13 November 2017, from: <http://www.eua-cde.org/reports-publications.html>.

⁸ European Science Foundation, 2010, *Research Careers in Europe: Landscape and Horizons*, a report by the ESF Member Organisation Forum on Research Careers.

⁹ European Commission, 2011, *Report of Mapping Exercise on Doctoral Training in Europe 'Towards a Common Approach'*.