UNIVERSITY OF HELSINKI
CAREER MONITORING REPORT–
DOCTORAL GRADUATES OF
2004–2015

27 September 2019
Eric Carver & Tuukka Kangas
Strategic Services for Teaching
Institutional Research and Analysis

CONTENT

• Basic information on the career monitoring surveys of Finnish universities

• Support for the analysis: Basic information on the development of the academic job market since 2000

• Report description

• Results of career monitoring surveys of the University of Helsinki’s doctoral graduates in 2004–2015:
  • Respondents to career monitoring surveys
  • Job market situation of 2015 graduates three years after graduation
  • Correlation between education and employment (education requirements, satisfaction with degree)
  • Factors affecting employment and professional skills needs
  • Special theme: Researchers on the job market (graduates with research as their primary employment function)
CAREER MONITORING AT FINNISH UNIVERSITIES

• Nationwide career monitoring surveys:
  • Surveys of master’s graduates five years after graduation
  • Surveys of doctoral graduates two or three years after graduation (three years in the most recent surveys)

• The career monitoring group of the Aarresaari network of university career services is responsible for the surveys, while universities are responsible for utilising their data.

• The data on the töissä.fi website are based on career monitoring: https://toissa.fi/home-en-us/.

• Further information on career monitoring: https://www.aarresaari.net/career_monitoring

• The latest career monitoring data on master’s graduates: 2013 graduates (responses October–November 2018)

• The latest career monitoring data on doctoral graduates: 2015 graduates (responses October–November 2018)
DATA COLLECTION IN CAREER MONITORING SURVEYS

• Career monitoring surveys are sent to all graduates in the relevant target group.
• The target group for master’s graduate career monitoring includes all master’s graduates as well as all those with a Bachelor of Science (Pharmacy) degree or a Bachelor of Arts (Education) degree in kindergarten teacher education.
• Doctoral graduate career monitoring surveys are sent to all graduates in the relevant target group.
• Information on the target group is obtained from the national VIRTA database (which combines data from the student records of Finnish universities).
• The background variables of respondents are supplemented with information from the student records (major subject, degree programme, department, faculty).
• Address details are retrieved from the Population Register.
• The 2018 surveys were sent to respondents by text message (to those whose phone number was known) or by mail (all others). Additionally, the universities distributed the survey by email to those in the target group whose details were found in alumni registers.
• The data were collected in a nationwide and central manner by Research Stats Service TUPA of the University of Tampere and CSC – the IT Centre for Science, in collaboration with the career monitoring group of the Aarresaari network.
• Responses are always processed confidentially and so that individual respondents cannot be identified.
CAREER MONITORING
AT THE UNIVERSITY OF HELSINKI

- The University of Helsinki uses the data obtained from career monitoring surveys, for example, to develop education, guide and counsel students, provide career guidance and conduct research.

- Since 2016, career monitoring surveys have been conducted at the University through cooperation between several units. Career Services was previously responsible for coordinating the surveys, but this responsibility shifted to Strategic Services for Teaching at the beginning of 2019.

- Composition of the University’s project group for career monitoring in the 2018–2019 academic year:
  - Eric Carver, Strategic Services for Teaching
  - Tuukka Kangas, Institutional Research and Analysis
  - Miika Mertanen, Career Services
  - Erkki Raulo, Research Services
  - Kati Salmivaara, Communications

  In addition, those participating in and supporting the group activities include the Centre for University Teaching and Learning (Tarja Tuononen), the Student Register and the alumni relations team at Communications and Community Relations.
USE OF CAREER MONITORING IN THE DEVELOPMENT OF EDUCATION (E.G., DOCTORAL EDUCATION)

To be analysed in the changing context:
Trends in academic education, economic and job market developments, etc, other feedback.

200X–2015
Studies at the University

2015–2018
Early career of doctoral graduates
(3 years after graduation)

Autumn 2018 survey

Assessed against forecasts
1. Megatrends
2. Future scenarios
3. University's own vision for education

Feedback: assessment, significance of activity during studies for employment, etc.
Career progress? Positions, employers?
Correlation between education and employment?
Required skills?

Eric Carver
University of Helsinki
Strategic Services for Teaching
SUPPORT FOR THE ANALYSIS: BASIC INFORMATION ON THE DEVELOPMENT OF THE ACADEMIC JOB MARKET SINCE 2000

Eric Carver
Specialist
Strategic Services for Teaching, University of Helsinki

In cooperation with
Heikki Taulu
Economist
Confederation of Unions for Professional and Managerial Staff in Finland (Akava)
KEY FINDINGS ON JOB MARKET TRENDS 2000–2018

• The number of higher education graduates has increased in the job market, while the number of individuals with basic education as their highest qualification has declined significantly.

• After the turn of the millennium, the number of bachelor’s graduates has increased the most, more than doubling. Meanwhile, the number of working-age individuals who have completed the lowest level of tertiary education has declined. This is due to the reform of Finnish universities of applied sciences in the early 1990s, after which the lowest level of tertiary degrees, or vocational college degrees, has no longer been offered.

• The number of doctoral graduates has roughly doubled in the 2000s.*

• The financial crisis of 2008–2009 and the subsequent period of stagnant economic growth (2010–2015) led to a significant decline in the job market and an increase in graduate unemployment.

• However, from late 2016 onwards, the job market has improved for all educational levels and fields. Graduate unemployment has been in a steep decline in 2017 and 2018.

• Relatively speaking, education has paid off in all economic situations. The higher the education level, the higher the employment rate.

• Differences in job market trends in various educational fields have been substantial in different economic situations. It is also important to note that some fields have enjoyed practically full employment since 2000, irrespective of economic cycles.

*NB! The classification of Statistics Finland also includes licentiate graduates in the researcher category, with the exception of Licentiates of Medicine, Licentiates of Dentistry and Licentiates of Veterinary Medicine, who are categorised as holders of a second-cycle (master’s level) university degree.
WORKFORCE (AGED 15–64) TRENDS BY EDUCATION LEVEL 1987–2017, SOURCE: STATISTICS FINLAND, EMPLOYMENT STATISTICS

- No qualification after basic education
- Upper secondary education/specialist vocational education
- Lowest level of tertiary education/lower level tertiary education
- Higher level tertiary education/doctoral education

Right-hand scale: Researcher level, doctoral and licentiate graduates
GRADUATE WORKFORCE IN VARIOUS FIELDS OF EDUCATION 2002–2017

SOURCE: STATISTICS FINLAND, EDUCATION RECORDS

- Master of Science (Technology)
- Master of Science (Economics and Business and Administration)
- Master of Arts (Humanities)
- Master of Arts (Education)
- Master of Science
- Master of Social Sciences
- Licentiate of Medicine
- Bachelor/Master of Laws
- Early childhood ed. teacher
- Arts subjects (second-cycle university degree)
- Master of Science (Agriculture and Forestry)
- Master of Theology
- Licentiate of Dentistry
- Master of Science (Pharmacy)
- Bachelor of Science (Pharmacy)
- Architect
GRADUATE WORKFORCE IN VARIOUS FIELDS OF EDUCATION 2002–2017

SOURCE: STATISTICS FINLAND, EDUCATION RECORDS

- Licentiate of Medicine
- Bachelor/Master of Laws
- Early childhood ed. teacher
- Arts subjects (second-cycle university degree)
- Master of Science (Agriculture and Forestry)
- Master of Theology
- Licentiate of Dentistry
- Bachelor of Science (Pharmacy)
- Architect
GRADUATE EMPLOYMENT RATE (%) BY EDUCATION LEVEL, AGED 15–64. 2007-2017
SOURCE: STATISTICS FINLAND

- Researcher level education
- Higher level tertiary education
- Lower level tertiary education
- Lowest level of tertiary education
- Upper secondary education
EMPLOYMENT RATES IN CERTAIN HIGHER EDUCATION FIELDS, AGED 15–64, 2002–2017
SOURCE: STATISTICS FINLAND, EMPLOYMENT STATISTICS

- Licentiate of Medicine
- Master of Arts (Education)
- Licentiate of Medicine
- Bachelor and Master of Science (Pharmacy)
- Master of Laws
- Architect
- Master of Science (Technology)
- Master of Science (Economics and Business and Administration)
- Researcher level
- Higher level tertiary education
- Master of Social Sciences
- Master of Theology
- Master of Science (Agriculture and Forestry)
- Master of Science
- Early childhood ed. teacher
- Master of Arts (Humanities)
- Master of Arts (Humanities)
- Early childhood ed. teacher
- Arts subjects (second-cycle university degree)
SHARE OF UNEMPLOYED GRADUATES IN THE WORKFORCE
AT VARIOUS EDUCATION LEVELS 2004–2018, %

SOURCES: STATISTICS FINLAND, EMPLOYMENT STATISTICS; MINISTRY OF ECONOMIC AFFAIRS AND EMPLOYMENT, EMPLOYMENT SERVICE STATISTICS. 12-MONTH AVERAGE OF THE TOTAL NUMBER OF

Graph showing the share of unemployed graduates in various education levels from 2004 to 2018. The graph includes data for all unemployed, licentiate graduates, lower level tertiary education, higher level tertiary education, and doctoral graduates.
SHARE OF UNEMPLOYED GRADUATES IN THE WORKFORCE IN CERTAIN FIELDS OF EDUCATION IN 2004-2018

SOURCES: STATISTICS FINLAND, EMPLOYMENT STATISTICS; MINISTRY OF ECONOMIC AFFAIRS AND EMPLOYMENT, EMPLOYMENT SERVICE STATISTICS. 12-MONTH AVERAGE OF TOTAL NUMBER OF U

- Arts subjects (second-cycle university degree)
- Bachelor/Master of Laws
- Bachelor of Science (Pharmacy)
- Bachelor of Science (Technology)
- Master of Arts (Education)
- Master of Arts (Humanities)
- Master of Science
- Master of Science (Agriculture and Forestry)
- Master of Science (Economics and Business and Administration)
- Master of Science (Technology)
- Master of Theology
- Master of Social Sciences
- Bachelor/Master of Laws
- Early childhood ed. teacher
- Master of Science (Economics and Business and Administration)
- Master of Science (Agriculture and Forestry)
- Master of Arts (Humanities)
- Master of Science
- Master of Science (Agriculture and Forestry)
- Master of Theology
- Master of Social Sciences
UNIVERSITY OF HELSINKI
CAREER MONITORING
REPORT – DOCTORAL
GRADUATES OF 2004-2015

Eric Carver
Strategic Services for Teaching

Tuukka Kangas
Institutional Research and Analysis
CONTENT OF THE CAREER MONITORING REPORT

- The report focuses on the latest career monitoring survey, conducted in autumn 2018.
- The target group of the nationwide survey consisted of doctoral graduates of 2015.
- The report also uses the results of previous career monitoring surveys (graduates of 2005–2014) to enable a temporal comparison.
- In comparing the results, it is important to note that the graduates of 2005, 2007, 2009, 2011 and 2013 took the survey two years after graduation, while others completed the surveys three years after graduation. Until 2015, career-tracking surveys were conducted by alternately targeting those who had graduated two or three years ago. Since 2017, the survey has been conducted annually by focusing on those who have graduated three years ago.
- Faculty-level results are often reported by adding up the results of several survey years.
- The results of the University of Helsinki are reported in accordance with the faculty structures that have been in place since early 2017. In practice, this means that psychology and logopedics graduates are included in the results for the Faculty of Medicine, and phonetics and cognition science graduates are included in the results for the Faculty of Arts.
- There were significant differences in the response rates between those who graduated in 2015 from different faculties, with the rates ranging from 32% to 67%. The response rate for doctoral graduate career monitoring increased by seven percentage units from the previous doctoral survey.
NOTES ON THE GRAPHS USED IN THE REPORT

• The graduates’ employer sector and the primary nature of employment are reported using a model in which only the major response options 4–6 are displayed. All other responses are categorised under ‘Other’. This solution makes it easier to interpret the graphs and identify the key response options.

• In the career-tracking report for doctoral graduates, the graphs for the University and doctoral school levels focus on the responses of the graduates of 2015. The reporting of faculty-level results mainly incorporates the responses of the graduates of 2014–2015.

• In the case of questions with six or seven response options, the responses are reported by classifying them so that options 4–6 (fully agree, agree, slightly agree) are added up. This same principle has also been used for the breakdown of responses to compare faculties.
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>↑</td>
<td>Increase, statistically significant</td>
</tr>
<tr>
<td>⨂</td>
<td>Increase, statistically insignificant</td>
</tr>
<tr>
<td>⇔</td>
<td>No change</td>
</tr>
<tr>
<td>⨃</td>
<td>Decrease, statistically insignificant</td>
</tr>
<tr>
<td>⨄</td>
<td>Decrease, statistically significant</td>
</tr>
</tbody>
</table>
## RESPONSE RATES 1/2

<table>
<thead>
<tr>
<th>Year of graduation (survey conducted)</th>
<th>Biological and Environmental Sciences</th>
<th>Veterinary Medicine</th>
<th>Pharmacy</th>
<th>Medicine</th>
<th>Agriculture and Forestry</th>
<th>Science</th>
<th>University total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–2005 (2007)</td>
<td>58 (61%)</td>
<td>16 (73%)</td>
<td>11 (65%)</td>
<td>129 (61%)</td>
<td>37 (67%)</td>
<td>57 (46%)</td>
<td>461 (59%)</td>
</tr>
<tr>
<td>2006–2007 (2009)</td>
<td>61 (50%)</td>
<td>7 (37%)</td>
<td>9 (47%)</td>
<td>112 (51%)</td>
<td>41 (68%)</td>
<td>63 (48%)</td>
<td>421 (51%)</td>
</tr>
<tr>
<td>2008–2009 (2011)</td>
<td>63 (53%)</td>
<td>14 (58%)</td>
<td>13 (48%)</td>
<td>143 (52%)</td>
<td>42 (55%)</td>
<td>56 (46%)</td>
<td>491 (53%)</td>
</tr>
<tr>
<td>2010–2011 (2013)</td>
<td>44 (47%)</td>
<td>17 (55%)</td>
<td>9 (36%)</td>
<td>122 (48%)</td>
<td>29 (45%)</td>
<td>55 (46%)</td>
<td>435 (49%)</td>
</tr>
<tr>
<td>2012–2013 (2015)</td>
<td>42 (45%)</td>
<td>10 (50%)</td>
<td>14 (50%)</td>
<td>135 (52%)</td>
<td>46 (58%)</td>
<td>60 (47%)</td>
<td>447 (50%)</td>
</tr>
<tr>
<td>2014 (2017/2018)</td>
<td>14 (27%)</td>
<td>10 (56%)</td>
<td>6 (46%)</td>
<td>53 (40%)</td>
<td>19 (39%)</td>
<td>27 (40%)</td>
<td>200 (42%)</td>
</tr>
<tr>
<td><strong>2015 (2018)</strong></td>
<td><strong>28 (44%)</strong></td>
<td><strong>10 (40%)</strong></td>
<td><strong>9 (47%)</strong></td>
<td><strong>67 (51%)</strong></td>
<td><strong>25 (62%)</strong></td>
<td><strong>38 (43%)</strong></td>
<td><strong>260 (49%)</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>310</strong></td>
<td><strong>84</strong></td>
<td><strong>71</strong></td>
<td><strong>761</strong></td>
<td><strong>239</strong></td>
<td><strong>356</strong></td>
<td><strong>2,751</strong></td>
</tr>
</tbody>
</table>
## RESPONSE RATES 2/2

<table>
<thead>
<tr>
<th>Year of graduation (survey conducted)</th>
<th>Arts</th>
<th>Educational Sciences</th>
<th>Law</th>
<th>Theology</th>
<th>Social Sciences</th>
<th>University total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–2005 (2007)</td>
<td>45 (56%)</td>
<td>25 (74%)</td>
<td>13 (57%)</td>
<td>22 (65%)</td>
<td>48 (62%)</td>
<td>461 (59%)</td>
</tr>
<tr>
<td>2006–2007 (2009)</td>
<td>38 (49%)</td>
<td>24 (69%)</td>
<td>13 (50%)</td>
<td>12 (46%)</td>
<td>41 (51%)</td>
<td>421 (51%)</td>
</tr>
<tr>
<td>2008–2009 (2011)</td>
<td>61 (56%)</td>
<td>26 (67%)</td>
<td>12 (57%)</td>
<td>16 (59%)</td>
<td>45 (55%)</td>
<td>491 (53%)</td>
</tr>
<tr>
<td>2010–2011 (2013)</td>
<td>55 (49%)</td>
<td>21 (57%)</td>
<td>16 (53%)</td>
<td>21 (66%)</td>
<td>46 (57%)</td>
<td>435 (49%)</td>
</tr>
<tr>
<td>2012–2013 (2015)</td>
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<td>10 (43%)</td>
<td>15 (52%)</td>
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<td>447 (50%)</td>
</tr>
<tr>
<td>2014 (2017/2018)</td>
<td>31 (46%)</td>
<td>8 (38%)</td>
<td>2 (17%)</td>
<td>9 (64%)</td>
<td>21 (57%)</td>
<td>200 (42%)</td>
</tr>
<tr>
<td><strong>2015 (2018)</strong></td>
<td><strong>31 (53%)</strong></td>
<td><strong>12 (67%)</strong></td>
<td><strong>7 (32%)</strong></td>
<td><strong>10 (67%)</strong></td>
<td><strong>23 (49%)</strong></td>
<td><strong>260 (49%)</strong></td>
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<tr>
<td>Yhteensä</td>
<td>317</td>
<td>132</td>
<td>73</td>
<td>105</td>
<td>267</td>
<td>2,751</td>
</tr>
</tbody>
</table>
RESPONDENTS

• 66% of the respondents were women (61% of graduates).

• 90% of the respondents were Finnish citizens (81% of graduates).

• The average age of the respondents upon graduation was 38 (that of graduates was 37).
JOB MARKET SITUATION OF 2015 GRADUATES
THREE YEARS AFTER GRADUATION

• 97% employed, 2% unemployed and 2% outside the workforce
• Share of employed in the workforce: 98%
• Most common employer sectors
  University: 33%
  Private company: 28%
  Municipality/joint municipal authority: 15%
Most common primary nature of work
  Research: 45%
  Work with clients/patients: 14%
  Teaching or education: 10%
  Administration, planning and development: 10%
• Median monthly salary: €3,900
## Job Market Situation of 2015 Graduates at the Time of the Survey

<table>
<thead>
<tr>
<th>Share (%)</th>
<th>UH (N = 256)</th>
<th>All Finnish universities (N = 848)</th>
<th>Other Finnish universities (N = 592)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent full-time job</td>
<td>54%</td>
<td>55%</td>
<td>56%</td>
</tr>
<tr>
<td>Fixed-term full-time job</td>
<td>31%</td>
<td>28%</td>
<td>27%</td>
</tr>
<tr>
<td>Permanent part-time job</td>
<td>0%</td>
<td>0.9%</td>
<td>1%</td>
</tr>
<tr>
<td>Fixed-term part-time job</td>
<td>0.4%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Self-employed/entrepreneur/freelancer</td>
<td>4%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Several parallel employment contracts</td>
<td>6%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Subsidised employment/practical training</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Family leave (with employment contract)</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total employed</strong></td>
<td><strong>97%</strong></td>
<td><strong>95%</strong></td>
<td><strong>95%</strong></td>
</tr>
<tr>
<td>Unemployed jobseeker</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Labour market training or equivalent</td>
<td>0%</td>
<td>0.1%</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Total unemployed</strong></td>
<td><strong>2%</strong></td>
<td><strong>2%</strong></td>
<td><strong>2%</strong></td>
</tr>
<tr>
<td>Full-time study</td>
<td>0%</td>
<td>0.5%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Family leave (without employment contract)</td>
<td>0.8%</td>
<td>0.4%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total outside the workforce</strong></td>
<td><strong>2%</strong></td>
<td><strong>3%</strong></td>
<td><strong>4%</strong></td>
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</table>
## JOB MARKET SITUATION OF GRADUATES OF 2015
### AT THE TIME OF THE SURVEY

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</tr>
</thead>
<tbody>
<tr>
<td><strong>Permanent full-time job</strong></td>
<td>46%</td>
<td>60%</td>
<td>89%</td>
<td>39%</td>
<td>58%</td>
<td>69%</td>
<td>46%</td>
<td>50%</td>
<td>43%</td>
<td>50%</td>
<td>44%</td>
<td>54%</td>
</tr>
<tr>
<td><strong>Fixed-term full-time job</strong></td>
<td>32%</td>
<td>10%</td>
<td>11%</td>
<td>42%</td>
<td>25%</td>
<td>22%</td>
<td>38%</td>
<td>45%</td>
<td>43%</td>
<td>20%</td>
<td>35%</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Permanent part-time job</strong></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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</tr>
<tr>
<td><strong>Self-employed/entrepreneur/freelancer</strong></td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>14%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Several parallel employment contracts</strong></td>
<td>7%</td>
<td>10%</td>
<td>0%</td>
<td>13%</td>
<td>8%</td>
<td>0%</td>
<td>4%</td>
<td>3%</td>
<td>0%</td>
<td>20%</td>
<td>17%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Subsidised employment/practical training</strong></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>4%</td>
<td>3%</td>
<td>%</td>
<td>10%</td>
<td>%</td>
</tr>
<tr>
<td><strong>Total employed</strong></td>
<td>93%</td>
<td>100%</td>
<td>100%</td>
<td>94%</td>
<td>92%</td>
<td>97%</td>
<td>92%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>97%</td>
</tr>
<tr>
<td><strong>Unemployed jobseeker</strong></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Labour market training or equivalent</strong></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total unemployed</strong></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Full-time study</strong></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Family leave (without employment contract)</strong></td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0.8%</td>
</tr>
<tr>
<td><strong>Total outside the workforce</strong></td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Employer sector three years after graduation

Year of graduation

2015 (234)
- University: 37%
- Company: 21%
- Municipality/joint municipal authority: 16%
- Organisation/foundation/similar: 11%
- State: 10%
- Other: 6%

2014 (188)
- University: 36%
- Company: 18%
- Municipality/joint municipal authority: 17%
- Organisation/foundation/similar: 10%
- State: 8%
- Other: 11%

2013 (219)
- University: 30%
- Company: 19%
- Municipality/joint municipal authority: 15%
- Organisation/foundation/similar: 14%
- State: 13%
- Other: 10%

2012 (196)
- University: 40%
- Company: 14%
- Municipality/joint municipal authority: 14%
- Organisation/foundation/similar: 14%
- State: 7%
- Other: 10%

2011 (221)
- University: 44%
- Company: 12%
- Municipality/joint municipal authority: 12%
- Organisation/foundation/similar: 8%
- State: 15%
- Other: 9%

2010 (194)
- University: 33%
- Company: 17%
- Municipality/joint municipal authority: 19%
- Organisation/foundation/similar: 9%
- State: 13%
- Other: 9%

Number of respondents in brackets
Maximum 6 options is shown.
The rest of the respondents are included in the category 'Other'.
Share of respondents whose primary employer at the time of the survey was a private company
The graph displays information on the graduates of 2014, 2015. In brackets number of respondents. Maximum 5 options is shown. The rest of the respondents are included in the category 'Other'.
The graph displays information on the graduates of 2015. In brackets, number of respondents. Maximum 5 options is shown. The rest of the respondents are included in the category 'Other'.
Nature of employment three years after graduation

Year of graduation

- 2015 (251)
  - Research: 45
  - Work with customers/patients: 14
  - Education: 10
  - Planning/development: 10
  - Consulting/training: 18

- 2014 (182)
  - Research: 50
  - Work with customers/patients: 15
  - Education: 10
  - Planning/development: 5
  - Consulting/training: 15

- 2013 (213)
  - Research: 45
  - Work with customers/patients: 17
  - Education: 6
  - Planning/development: 11
  - Consulting/training: 6

- 2012 (189)
  - Research: 46
  - Work with customers/patients: 17
  - Education: 11
  - Planning/development: 7
  - Consulting/training: 6

- 2011 (220)
  - Research: 52
  - Work with customers/patients: 13
  - Education: 11
  - Planning/development: 8
  - Consulting/training: 12

- 2010 (191)
  - Research: 40
  - Work with customers/patients: 17
  - Education: 13
  - Planning/development: 6
  - Consulting/training: 20

Number of respondents in brackets.
Maximum 6 options is shown.
The rest of the respondents are included in the category 'Other'.
The graph displays information on the graduates of 2014, 2015. In brackets, the number of respondents is shown. The rest of the respondents are included in the category 'Other'.

In each faculty, the bar chart shows the share of graduates who have chosen different types of employment. The maximum of 5 options is shown, and the rest of the respondents are included in the category 'Other'.

Faculty:
- Agriculture and Forestry (41)
- Arts (55)
- Biological and Environmental Sciences (39)
- Educational Sciences (19)
- Law (9)
- Medicine (112)
- Pharmacy (15)
- Science (63)
- Social Sciences (43)
- Theology (18)
- University of Helsinki (433)
- Veterinary Medicine (19)
The graph displays information on the graduates of 2015.
In brackets number of respondents.
Maximum 5 options is shown.
The rest of the respondents are included in the category 'Other'.
### NATURE OF EMPLOYMENT AT THE TIME OF THE SURVEY

<table>
<thead>
<tr>
<th>Nature of employment</th>
<th>Private company</th>
<th>Other</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>32%</td>
<td>50%</td>
<td>47%</td>
</tr>
<tr>
<td>Work with clients/patients</td>
<td>9%</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>Teaching/education</td>
<td>0%</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Planning/development</td>
<td>18%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Management/supervisory work</td>
<td>5%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Consultation/training</td>
<td>16%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Administration</td>
<td>0.7%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Clerical work</td>
<td>5%</td>
<td>0.6%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Including graduates of 2012–2015 and groups with at least ten respondents.
The graph displays information on the graduates of 2014, 2015 in brackets number of respondents. The figures include those in full-time employment as well as entrepreneurs/self-employed/freelancers.
HAS BEEN UNEMPLOYED AFTER GRADUATION, 2014 AND 2015 GRADUATES

<table>
<thead>
<tr>
<th>Faculty, number of respondents in brackets</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts (61)</td>
<td>48%</td>
</tr>
<tr>
<td>Pharmacy (14)</td>
<td>43%</td>
</tr>
<tr>
<td>Biological and Environmental Sciences (42)</td>
<td>36%</td>
</tr>
<tr>
<td>Social Sciences (43)</td>
<td>35%</td>
</tr>
<tr>
<td>Agriculture and Forestry (42)</td>
<td>33%</td>
</tr>
<tr>
<td>Science (65)</td>
<td>29%</td>
</tr>
<tr>
<td>University of Helsinki (450)</td>
<td>27%</td>
</tr>
<tr>
<td>Educational Sciences (20)</td>
<td>25%</td>
</tr>
<tr>
<td>Veterinary Medicine (9)</td>
<td>22%</td>
</tr>
<tr>
<td>Theology (19)</td>
<td>21%</td>
</tr>
<tr>
<td>Law (7)</td>
<td>14%</td>
</tr>
<tr>
<td>Medicine (116)</td>
<td>10%</td>
</tr>
</tbody>
</table>

University as a whole

Average: 9 months  
Median: 6 months  
Max. 3 months: 32%  
More than one year: 20%
This year’s doctoral graduate career monitoring survey compares the early career stages of those working in the university sector, those primarily conducting research work and those who funded their doctoral studies primarily with a grant. The focus is on the number of graduates who have experienced unemployment after their graduation.

The share of graduates who have experienced unemployment has, in general, increased when comparing the graduates of 2008–2015. The hypothesis was that all the above groups would have had, on average, more experiences of unemployment in their early careers due to the funding cuts affecting Finnish universities in the 2010s. Unfortunately, this hypothesis turned out to be correct in all comparisons.

Doctoral graduates of 2013, 2014 and 2015 who were working in the university sector at the time of the career tracking survey, who mostly conducted research work or who funded their doctoral studies primarily with a grant had, on average, experienced more unemployment than others who completed a doctoral degree in the same years.

The comparison included the University of Helsinki’s graduates of 2004–2015. It is important to note that the graduates of 2005, 2007, 2009, 2011 and 2013 took the survey two years after graduation, while others completed the surveys three years after graduation. Until 2015, career monitoring surveys were conducted by alternately targeting those who had graduated two or three years ago. Since 2017, the survey has been conducted annually by focusing on those who have graduated three years ago.
Has been unemployed after graduation
Research as the primary nature of employment at the time of the survey
CORRELATION BETWEEN EDUCATION AND EMPLOYMENT AMONG 2015 GRADUATES

• Respondents used a six-level scale. The figures show response options 4–6 (slightly satisfied-very satisfied/somewhat agree-fully agree).

• Requirements of current job matches well with academic qualifications: 84% respondents

• Able to use the knowledge and skills acquired at the University in current job: 87%

• Satisfied with the degree from a career perspective: 88%
The requirements of current job correspond well with academic qualifications

The graph displays information on the graduates of 2014, 2015. In brackets number of respondents.

- Pharmacy (15)
- Social Sciences (43)
- Medicine (115)
- Arts (55)
- Science (62)
- University of Helsinki (435)
- Educational Sciences (19)
- Agriculture and Forestry (41)
- Law (9)
- Theology (18)
- Veterinary Medicine (20)
- Biological and Environmental Sciences (38)
The skills and knowledge I learned at the university can be applied well in my current job

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy (15)</td>
<td>67</td>
</tr>
<tr>
<td>Veterinary Medicine (20)</td>
<td>25</td>
</tr>
<tr>
<td>Arts (56)</td>
<td>52</td>
</tr>
<tr>
<td>Science (63)</td>
<td>52</td>
</tr>
<tr>
<td>Educational Sciences (19)</td>
<td>42</td>
</tr>
<tr>
<td>Law (9)</td>
<td>44</td>
</tr>
<tr>
<td>Social Sciences (44)</td>
<td>66</td>
</tr>
<tr>
<td>University of Helsinki (439)</td>
<td>45</td>
</tr>
<tr>
<td>Agriculture and Forestry (41)</td>
<td>44</td>
</tr>
<tr>
<td>Medicine (115)</td>
<td>35</td>
</tr>
<tr>
<td>Theology (18)</td>
<td>39</td>
</tr>
<tr>
<td>Biological and Environmental Sciences (39)</td>
<td>38</td>
</tr>
</tbody>
</table>

The graph displays information on the graduates of 2014, 2015. In brackets, the number of respondents.
Overall satisfaction with the degree in terms of career

The graph displays information on the graduates of 2014, 2015.
In brackets number of respondents
## Correlation Between Education and Employment, 2014–2015 Graduates by Faculty

<table>
<thead>
<tr>
<th>Faculty, number of respondents in brackets</th>
<th>Requirements of current job matches well with academic qualifications*</th>
<th>Able to use the knowledge and skills acquired at the University in the current job*</th>
<th>Satisfied with the degree from a career perspective*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological and Environmental Sciences (38–41)</td>
<td>71%</td>
<td>82%</td>
<td>80%</td>
</tr>
<tr>
<td>Veterinary Medicine (20)</td>
<td>75%</td>
<td>95%</td>
<td>90%</td>
</tr>
<tr>
<td>Pharmacy (15)</td>
<td>93%</td>
<td>100%</td>
<td>87%</td>
</tr>
<tr>
<td>Arts (55–60)</td>
<td>87%</td>
<td>93%</td>
<td>85%</td>
</tr>
<tr>
<td>Educational Sciences (19–20)</td>
<td>84%</td>
<td>89%</td>
<td>100%</td>
</tr>
<tr>
<td>Medicine (115–118)</td>
<td>88%</td>
<td>86%</td>
<td>88%</td>
</tr>
<tr>
<td>Agriculture and Forestry (41–44)</td>
<td>78%</td>
<td>88%</td>
<td>86%</td>
</tr>
<tr>
<td>Science (62–64)</td>
<td>87%</td>
<td>90%</td>
<td>88%</td>
</tr>
<tr>
<td>Law (9)</td>
<td>78%</td>
<td>89%</td>
<td>89%</td>
</tr>
<tr>
<td>Theology (18)</td>
<td>78%</td>
<td>83%</td>
<td>94%</td>
</tr>
<tr>
<td>Social Sciences (43–44)</td>
<td>91%</td>
<td>89%</td>
<td>91%</td>
</tr>
<tr>
<td>University of Helsinki (435–453)</td>
<td>84%</td>
<td>89%</td>
<td>88%</td>
</tr>
</tbody>
</table>

Share of options 4–6 (slightly agree/agree/fully agree) on a six-level scale
## CORRELATION BETWEEN EDUCATION AND EMPLOYMENT, 2015 GRADUATES BY DOCTORAL SCHOOL

<table>
<thead>
<tr>
<th>Doctoral school, number of respondents in brackets</th>
<th>Requirements of current job matches well with academic qualifications*</th>
<th>Able to use the knowledge and skills acquired at the University in the current job*</th>
<th>Satisfied with the degree from a career perspective*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities and Social Sciences (89–93)</td>
<td>89%</td>
<td>90%</td>
<td>92%</td>
</tr>
<tr>
<td>Natural Sciences (36)</td>
<td>89%</td>
<td>89%</td>
<td>86%</td>
</tr>
<tr>
<td>Health Sciences (85–86)</td>
<td>84%</td>
<td>86%</td>
<td>88%</td>
</tr>
<tr>
<td>Environmental, Food and Biological Sciences (39–43)</td>
<td>72%</td>
<td>80%</td>
<td>81%</td>
</tr>
<tr>
<td>University of Helsinki (249–258)</td>
<td>84%</td>
<td>87%</td>
<td>88%</td>
</tr>
</tbody>
</table>

Share of options 4–6 (slightly agree/agree/fully agree) on a six-level scale

*Share of options 4–6 (slightly agree/agree/fully agree) on a six-level scale
## CONNECTION BETWEEN SATISFACTION WITH DEGREE AND OTHER VARIABLES, 2015 GRADUATES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response ¹</th>
<th>Share of satisfied ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job requirements match education</td>
<td>Yes</td>
<td>94%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>65%</td>
</tr>
<tr>
<td>Able to use the knowledge and skills acquired at the University</td>
<td>Yes</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>65%</td>
</tr>
<tr>
<td>Gender</td>
<td>Man</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Woman</td>
<td>90%</td>
</tr>
<tr>
<td>Has been unemployed</td>
<td>Yes</td>
<td>82%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>91%</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>88%</td>
</tr>
</tbody>
</table>

¹Options 4-6 (fairly satisfied/satisfied/very satisfied; slightly agree/agree/fully agree) on a six-level scale
²Difference between groups, Z test, finite sample correction factor taken into account
FACTORS AFFECTING EMPLOYMENT AND PROFESSIONAL SKILLS NEEDS, 2015 GRADUATES

• Most important factors affecting employment*
  • Second-cycle degree: 83%
  • Ability to describe one’s knowledge and skills: 82%
  • Doctoral degree: 73%
  • Contacts and networks: 69%

• Most important skills areas in employment:
  • Analytical and systematic thinking skills
  • Problem-solving skills
  • Self-direction/initiative
  • Ability to learn and take in new information
  • Information-seeking skills
  • Stress management skills

* Share of respondents selecting options 4-6 (4=fairly important, 5=important, 6 =very important)
The factors that have affected employment

The graph displays information on the graduates of 2015. In brackets number of respondents.
# FACTORS AFFECTING EMPLOYMENT, 2015 GRADUATES

<table>
<thead>
<tr>
<th></th>
<th>Humanities and Social Sciences</th>
<th>Natural Sciences</th>
<th>Health Sciences</th>
<th>Environmental, Food and Biological Sciences</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second-cycle degree</td>
<td>82%</td>
<td>76%</td>
<td>83%</td>
<td>90%</td>
<td>83%</td>
</tr>
<tr>
<td>Ability to describe one’s knowledge and skills</td>
<td>85%</td>
<td>89%</td>
<td>76%</td>
<td>81%</td>
<td>82%</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>80%</td>
<td>86%</td>
<td>63%</td>
<td>66%</td>
<td>73%</td>
</tr>
<tr>
<td>Other work experience</td>
<td>73%</td>
<td>39%</td>
<td>77%</td>
<td>67%</td>
<td>68%</td>
</tr>
<tr>
<td>Contacts and networks</td>
<td>78%</td>
<td>64%</td>
<td>57%</td>
<td>74%</td>
<td>68%</td>
</tr>
<tr>
<td>Dissertation topic</td>
<td>64%</td>
<td>58%</td>
<td>48%</td>
<td>63%</td>
<td>58%</td>
</tr>
<tr>
<td>Other studies or training</td>
<td>49%</td>
<td>17%</td>
<td>67%</td>
<td>33%</td>
<td>48%</td>
</tr>
<tr>
<td>International experience</td>
<td>59%</td>
<td>42%</td>
<td>40%</td>
<td>45%</td>
<td>48%</td>
</tr>
<tr>
<td>Experience related to NGO activities or hobbies</td>
<td>19%</td>
<td>19%</td>
<td>11%</td>
<td>29%</td>
<td>18%</td>
</tr>
<tr>
<td>Activity and profile on social media</td>
<td>11%</td>
<td>11%</td>
<td>10%</td>
<td>21%</td>
<td>12%</td>
</tr>
</tbody>
</table>

The responses have been classified based on the response option that best describes the respondent’s primary duties. Options 4–6 (slightly agree/agree/fully agree) on a six-level scale for all responses.
My doctoral degree has provided me with

- More demanding job assignments (257): 69% Yes, 24% No, 7% Cannot say
- More meaningful job assignments (257): 63% Yes, 25% No, 13% Cannot say
- A higher salary (257): 54% Yes, 35% No, 11% Cannot say
- Better status at my place of work (257): 50% Yes, 34% No, 16% Cannot say
- A better position on the labour market (256): 50% Yes, 21% No, 29% Cannot say
- A job with a new employer (255): 40% Yes, 48% No, 12% Cannot say

The graph displays information on the graduates of 2015. In brackets: number of respondents.
Skills radar

[Graph showing skills radar with various skills plotted on axes]

https://hyurapalvelut.shinyapps.io/osaamistutka/

The graph includes responses with the following limitations:
Graduates of 2015
Number of respondents: 226-233
RESEARCHERS ON THE JOB MARKET

The responses have been classified based on the response that best describes the respondent’s primary duties.
'Research' as the primary nature of employment, share of respondents
The graph displays information on the graduates of 2015.
In brackets number of respondents.
Maximum 5 options is shown.
The rest of the respondents are included in the category 'Other'.
The most significant difference from other respondents is the emphasis on universities and the smaller share of municipalities/joint municipal authorities.
Has been unemployed after graduation
Research as the primary nature of employment at the time of the survey

Year of graduation

Share


No
University of Helsinki
Yes
## CONNECTION WITH OTHER VARIABLES, 2014–2015 GRADUATES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Research(^1)</th>
<th>Share(^2)</th>
<th>All respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied with degree</td>
<td>Yes</td>
<td>91%</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>83%</td>
<td></td>
</tr>
<tr>
<td>Able to use the knowledge and skills acquired at the University</td>
<td>Yes</td>
<td>94%</td>
<td>84%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>77%</td>
<td></td>
</tr>
<tr>
<td>Job requirements match education</td>
<td>Yes</td>
<td>92%</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>Has been unemployed</td>
<td>Yes</td>
<td>32%</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Primary activity at the time of the survey

\(^2\) Options 4-6 (fairly satisfied/satisfied/very satisfied; slightly agree/agree/fully agree) on a six-level scale
# FACTORS AFFECTING EMPLOYMENT, 2015 GRADUATES

<table>
<thead>
<tr>
<th>Factor</th>
<th>Research</th>
<th>No research</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second-cycle degree</td>
<td>82%</td>
<td>83%</td>
<td>83%</td>
</tr>
<tr>
<td>Ability to describe one’s knowledge and skills</td>
<td>85%</td>
<td>80%</td>
<td>82%</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>90%</td>
<td>60%</td>
<td>73%</td>
</tr>
<tr>
<td>Other work experience</td>
<td>50%</td>
<td>83%</td>
<td>68%</td>
</tr>
<tr>
<td>Contacts and networks</td>
<td>74%</td>
<td>64%</td>
<td>68%</td>
</tr>
<tr>
<td>Dissertation topic</td>
<td>71%</td>
<td>47%</td>
<td>58%</td>
</tr>
<tr>
<td>Other studies or training</td>
<td>32%</td>
<td>60%</td>
<td>48%</td>
</tr>
<tr>
<td>International experience</td>
<td>55%</td>
<td>42%</td>
<td>48%</td>
</tr>
<tr>
<td>Experience related to activities in organisations or hobbies</td>
<td>10%</td>
<td>24%</td>
<td>18%</td>
</tr>
<tr>
<td>Activity and profile on social media</td>
<td>10%</td>
<td>14%</td>
<td>12%</td>
</tr>
</tbody>
</table>

The responses have been classified based on the response option that best describes the respondent’s primary duties. Options 4–6 (fairly important/important/very important) on a seven-level scale for all responses.
The graph only shows the responses of those who chose research as their primary activity

https://hyurapalvelut.shinyapps.io/osaamistutka/
The share of employed graduates in the workforce is high (98%).

However, the share of graduates who have experienced unemployment in their early careers has increased from previous years (currently 30% of respondents). Differences between faculties are significant. Experiences of unemployment at the beginning of the career have increased particularly in the case of researchers.

Research is the primary occupation of the majority (45%) of the UH’s doctoral graduates.

The share of graduates working in companies has grown slightly in the 2010s (28% in 2015). The university sector remains the biggest employer, at 33%.

Doctoral graduates see a positive correlation between their education and employment. Of the respondents, 84% say their job requirements match their education, 87% state that they can use the knowledge and skills they have acquired, and 88% are satisfied with their degree from a career perspective.

Those working as researchers are more satisfied than other respondents with their degree from a career perspective. They also state more often than others that they can use the knowledge and skills they have acquired and they are more positive about the correlation between their education and job requirements.

According to the respondents, the key factors affecting employment include a previous second-cycle degree (83%), the ability to describe one’s knowledge and skills (82%), a doctoral degree (73%), work experience (68%) and contacts and networks (68%). More than half the respondents (56%) consider the dissertation topic an important factor affecting employment. There are significant differences in responses between those whose primary line of work is research and other respondents. Of the former, 90% consider a doctoral degree important for employment, whereas just 60% of the latter concur.

There is generally a positive correlation between the skills provided by a doctoral degree and the job requirements placed on doctoral graduates. Doctoral studies improve, for example, problem-solving skills, analytical and systematic thinking skills, self-direction and initiative – all important skills for employment. Areas requiring further development include cooperation, project management and negotiation skills. One of the areas of development mentioned by researchers relates to the skills required to apply for funding.
KEY DEVELOPMENT TARGETS IN THE LIGHT OF THE CAREER-TRACKING SURVEY

1. Recognition of the strengths of doctoral education in degree programmes and the job market
   - As a rule, doctoral education successfully develops the knowledge and skills required in research and other activities undertaken by doctoral graduates (see the Skills radar).
   - The current strengths of doctoral education relating to the ability to conduct independent scientific work (see previous slide) must be increasingly recognised in both degree programmes and the job market.

2. Reinforcement of support for career planning in doctoral education
   - The career paths of doctoral graduates and the processes of doctoral education are individual, and the various duties of doctoral graduates require different skills and qualifications. Examples include the commercialisation of research results and IPR skills, which are increasingly important in the private sector. Similarly, funding application skills are an important area of development for those working with research in the university sector.
   - Accordingly, support for career planning should be increasingly developed in doctoral education, and doctoral graduates should be supported in planning the development of their skills during doctoral education and in their ability to identify and verbalise their skills.
   - Networks and contacts (in Finland and abroad) as well as work experience are important for the employment of doctoral graduates. Connections between doctoral education and the external environment should be further enhanced.

3. Deeper analysis and addressing of the challenges of early career stages
   - The employment difficulties of doctoral graduates working in research and the university sector appear to be increasing more than average. This negative trend should be reversed through a systematic analysis of the underlying factors and measures to address them.
   - At the same time, it is important to be aware that doctoral education continues to equip students well for research work and that those engaged in research work are, on average, more satisfied with their degree than those respondents whose primary occupation is not research.