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KAWAMURA Mari HOSHINO Toshihiko

【Contributors】

HOSHINO Toshihiko

Director

1st Policy-Oriented Research Group, National Institute of Science and Technology Policy (NISTEP),
MEXT

KAWAMURA Mari

Senior Research Fellow

1st Policy-Oriented Research Group, National Institute of Science and Technology Policy (NISTEP),
MEXT

TSUCHIYA Takahiro

Professor

School of Data Science, Yokohama City University

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Fourth Report of Japan Doctoral Human Resource Profiling

First Policy-Oriented Research Group, National Institute of Science and Technology Policy, Ministry of Education, Culture, Sports, Science and Technology

KAWAMURA Mari HOSHINO Toshihiko

Abstract

The world has entered a period of great uncertainty in which events beyond expectations, such as the spread of infectious diseases and catastrophic disasters, occur. To cope with the rapid changes in social conditions, strengthening humankind's research capabilities, which are the source of our collective "intellect," is indispensable. The importance of the role expected of doctoral graduates has become greater than ever before.

Despite the above conditions, the number of students beginning doctoral coursework reached a peak in 2003, at 18,232, before decreasing to 14,976 in 2019. The reasons for this decrease are, among others, insufficient financial support and similar considerations during doctoral studies, the unclear career path of those who have completed doctoral coursework, and Japan's unstable employment situation. Moreover, the ratio of students who enter a doctoral program immediately after completing a master's program has decreased steadily over time. The percentage of those moving from master's to doctoral courses had exceeded 15% until 2001 but decreased to as low as 9.2% in 2019. This is a particularly serious problem, as many brilliant master's students seem to be avoiding doctoral studies.

To solve the problem of a declining number of doctoral students, the Japanese government has taken drastic measures based on the Comprehensive Package to Strengthen Research Capability and Support Young Researchers, which was established in January 2020. The Sixth Science, Technology, and Innovation Basic Plan, adopted at a Cabinet meeting in March 2021, set the goals that, "in the situation in which brilliant youths can anticipate the prospect of future success, the career path system for students to enter a doctoral course as bearers of 'intellect' shall be enhanced" and that "the environment, in which all brilliant doctoral human resources can anticipate the prospect of getting regular jobs in various fields, such as academia, industry, and administration, if they want and flourishing as leaders, shall be provided in the future." The Basic Plan also states that the government must take all urgently required measures, including the above-mentioned package, to address the issue.

The National Institute of Science and Technology Policy has conducted various research studies to provide the evidence necessary for the Japanese government's policymaking efforts. The Japan Doctoral Human Resource Profiling project has continuously followed the career paths of doctoral graduates since 2014, in hopes of understanding the situations of students before they enter doctoral courses, the experiences they have while pursuing a doctoral degree, their employment status after completing the doctoral coursework, and their status as researchers after graduation. These

data are essential for policymaking concerning doctoral students and the valuation and verification of the effects of the policy; they also contribute to the policy's development by providing objective evidence. Three cohort studies have been conducted to date. The subjects were people who had completed a doctoral course at a Japanese university in 2012, 2015, or 2018. Those who completed their doctoral coursework in 2018 are referred to as the "2018 cohort" in this report. This report investigated the situation of the 2018 cohort in 2020 (1.5 years after subjects completed their degrees). The results of the investigation are as follows:

- The ratio of participants reporting that they had work experience before beginning their doctoral studies exceeded 50% for the first time, and the mode of the ages of doctoral students rose to the 30s.
- Approximately 50% of participants who did not have work experience before beginning their doctoral studies did not qualify for full or partial financial aid. Some 70% of participants who had quit jobs did not qualify for full or partial financial aid.
- After completing their doctoral studies, around half the participants were employed by universities, and about 30% were employed by private firms. Those most likely to be employed by a university were graduates of humanities and social sciences programs, while those most likely to be employed at a private firm were engineering graduates.
- The future career prospects for participants who did not have work experience before beginning their doctoral studies varied. Approximately 30% reported that they wanted to work as a researcher in academia. In contrast, around 20% of respondents replied that they were not especially concerned about their place of employment and the need to conduct research. Another some 20% replied that they would accept jobs that were not tied to research.
- In terms of the Japanese government's support for doctoral students, the most common responses were that it should improve the research environment for researchers and provide doctoral students with salaries (each with more than 20% of respondents).

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Abstract

Abstract

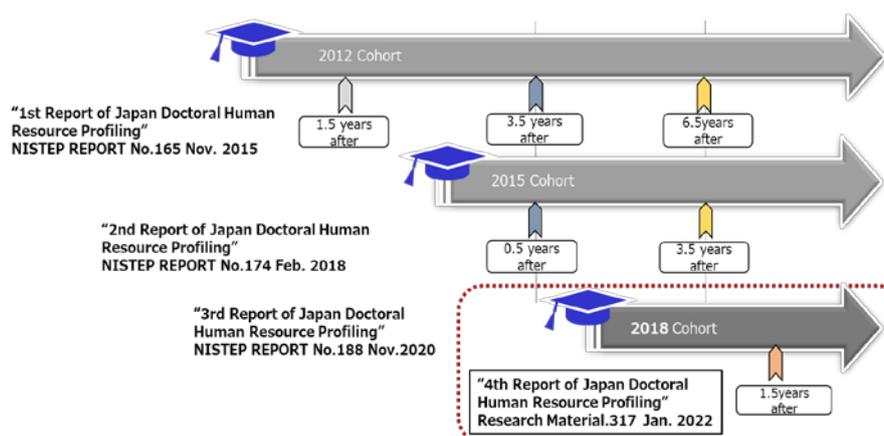
Abstract 1. Outline of Japan Doctoral Human Resource Profiling

In Japan, the number of students beginning doctoral coursework reached its peak at 18,232 in 2003, before decreasing to 14,976 in 2019. The reasons for this decrease are, among others, insufficient financial support and similar considerations during doctoral studies, the unclear career path of those who have completed doctoral coursework, and Japan's unstable employment situation. To cope with these problems, the Sixth Science, Technology, and Innovation Basic Plan, adopted at a Cabinet meeting in March 2021, set the goals that, "in the situation in which brilliant youths can anticipate the prospect of future success, the career path system for students to enter a doctoral course as bearers of 'intellect' shall be enhanced." The Japanese government has taken drastic measures to improve researchers' working conditions based on the Comprehensive Package to Strengthen Research Capability and Support Young Researchers.

The National Institute of Science and Technology Policy (NISTEP) has carried out the Japan Doctoral Human Resource Profiling (JD-Pro) project since 2014. The JD-Pro project has continuously followed the career paths of doctoral degree holders, aiming to understand the situations of students before they enter doctoral courses, the experiences they have while pursuing a doctoral degree, their employment status after completing doctoral coursework, and their status as researchers after graduation. Additionally, it seeks to contribute to policy development by providing objective evidence.

In 2020, Fourth Report of Japan Doctoral Human Resource Profiling surveyed those who had completed doctoral coursework in Japan in 2018 (1.5 years after completing doctoral coursework) (Figure in Abstract 1). The survey contents included their employment status, career consciousness, and research situations. The number of those who were asked to participate in the survey was 15,658, and the number of respondents was 3,894 (response rate: 24.9%).

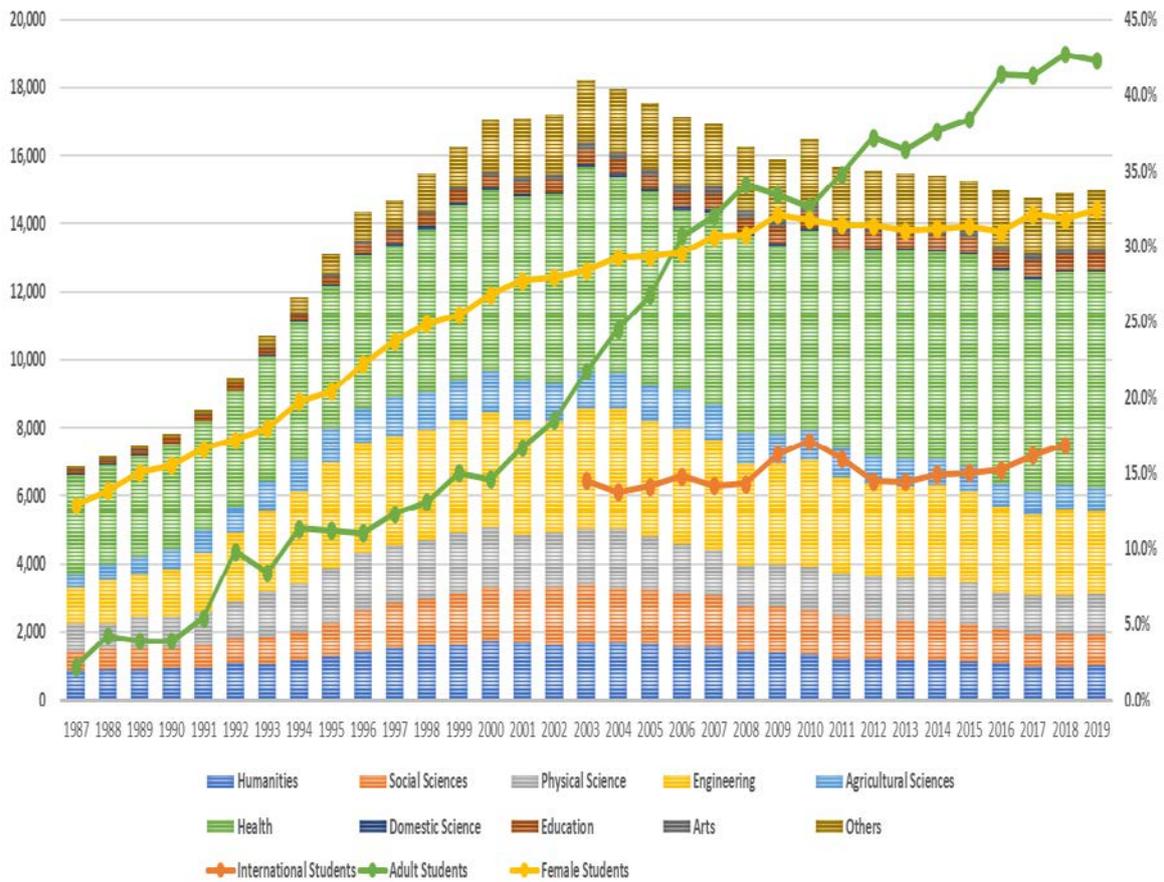
Figure in Abstract 1. State of implementing the JD-Pro project



Abstract 2. Tendency of students beginning doctoral coursework

According to the School Basic Survey, the percentage of students who had worked before beginning doctoral studies increased from 14.6% in 2000 to 42.3% in 2019 (a 300% increase). Thus, the number of students who had worked before beginning doctoral studies accounted for more than 40% of the total number of students entering a doctoral course (Figure in Abstract 2). In the JD-Pro project, 53.7% of students reported that they had worked before beginning doctoral studies (Figure in Abstract 3). The ratio of the number of students who worked while pursuing a doctoral degree (58.7%) was much higher than that of students who temporarily stopped working (6.2%) and that of students who quit working for the duration of their program (28.8%). Therefore, the number of students who had worked before beginning and during doctoral studies was revealed to account for approximately 30% of the total number of students entering a doctoral course (Figure in Abstract 4).

Figure in Abstract 2. Number of students entering a doctoral course in each field



Sources: The Report of the School Basic Survey and a survey by the Ministry of Education, Culture, Sports, Science, and Technology

Of students who reported having worked before beginning doctoral studies, the percentage who worked while pursuing a doctoral degree exceeded 50% in the fields of health care (69.3%), engineering (55.9%), and sociology (51.6%). Therefore, a certain number of students had worked before beginning and during doctoral studies (Figure in Abstract 5).

Figure in Abstract 3. Students who worked vs. those who did not work before beginning doctoral studies **Figure in Abstract 4. Employment status of students during doctoral studies**

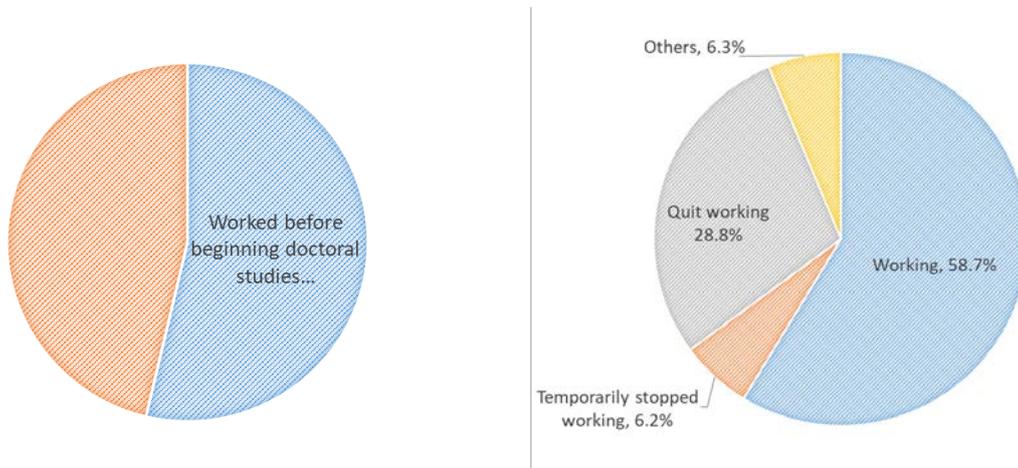
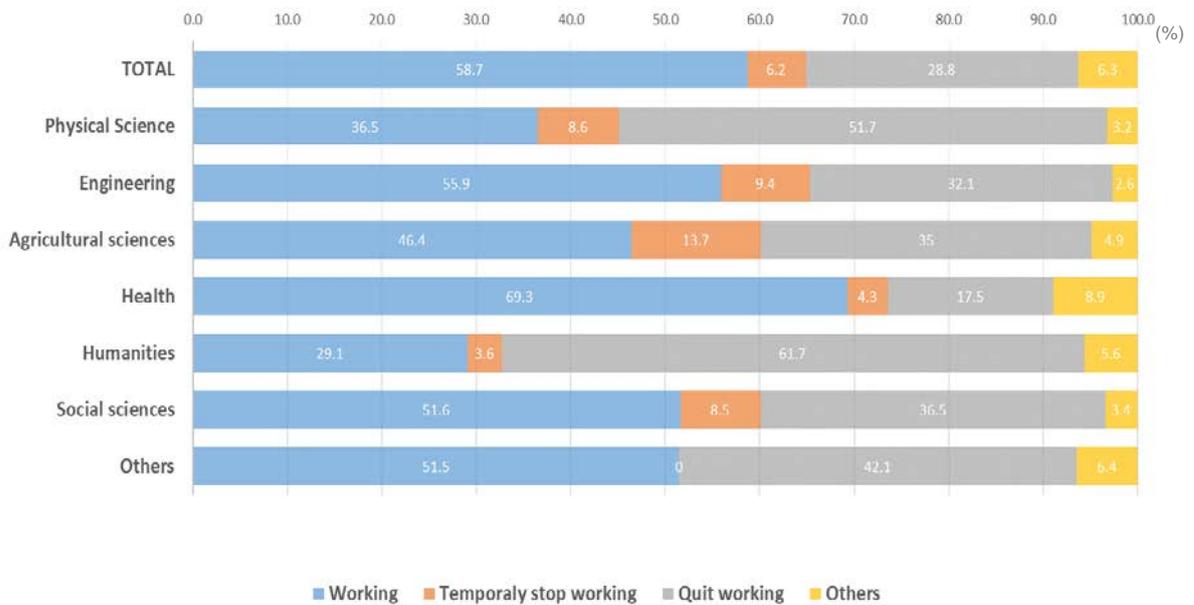


Figure in Abstract 5. Employment status of students who worked before beginning and during doctoral studies (according to discipline)



Abstract 3. Age distribution of respondents

Regarding the age distribution of the 2018 cohort, the percentage of students in their early 30s was the largest as a whole (38.5%), followed by those in their late 30s (24.4%), those in their 40s (14.8%), and those in their 20s (13.7%) (Figure in Abstract 6). When analyzed by student category, the percentage of doctoral students aged 30–34 years (51.7%) was much larger than that of doctoral students in their 20s (38.5%) — more than a 10 point difference. The majority of students who had worked before beginning doctoral studies was 35–39 years old for both students who worked while pursuing a doctoral degree (31.7%) and students who quit working (36.7%). Therefore, many students entered doctoral courses when they were young. When considering the discipline studied, the highest percentage of students in their 20s studied physics (30.4%) or engineering (21.0%), while the greatest numbers of students in their 40s studied sociology (20.2%) or health care (19.4%) (Figure in Abstract 7).

Figure in Abstract 6. Age distribution of students according to their categories

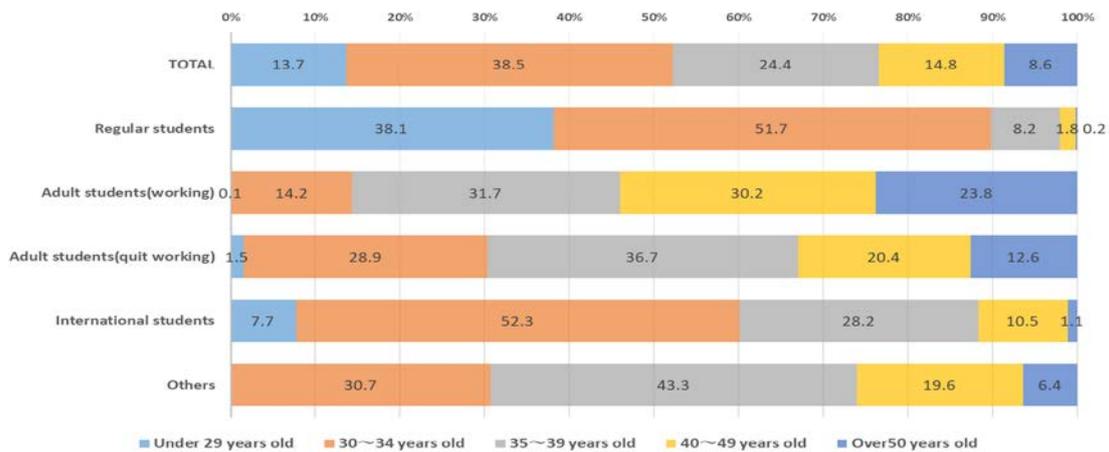
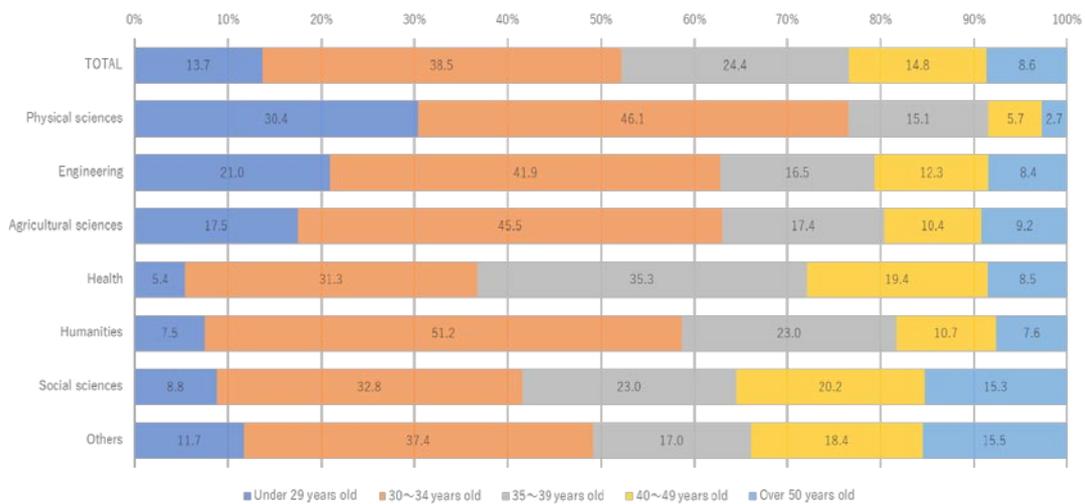


Figure in Abstract 7. Age distribution of students according to discipline



Abstract 4. Reasons for entering a doctoral course

Regarding the reasons for entering a doctoral course, the percentage of students who answered that “I was interested in research” was the highest (67.7%), followed by “I was interested in improving my abilities and skills” (58.0%) and “I had research issues and problem consciousness” (53.9%) (Figure in Abstract 8). When considering the student category, the percentage of students who had worked before beginning and during doctoral studies and responded that “my employer recommended entering a doctoral course to me or I needed a doctoral degree in my employer” was higher (19.6%) than that of students in other categories. Therefore, business improvement and career progression are the greatest motivations for students to enter a doctoral course. Foreign students, however, pointed out economic factors, such as “I could obtain a fellowship” (15.9%) and “I can expect a good job and a good income after obtaining a doctoral degree” (42.6%) (Figure in Abstract 9).

Figure in Abstract 8. Reasons for entering a doctoral course (overall)

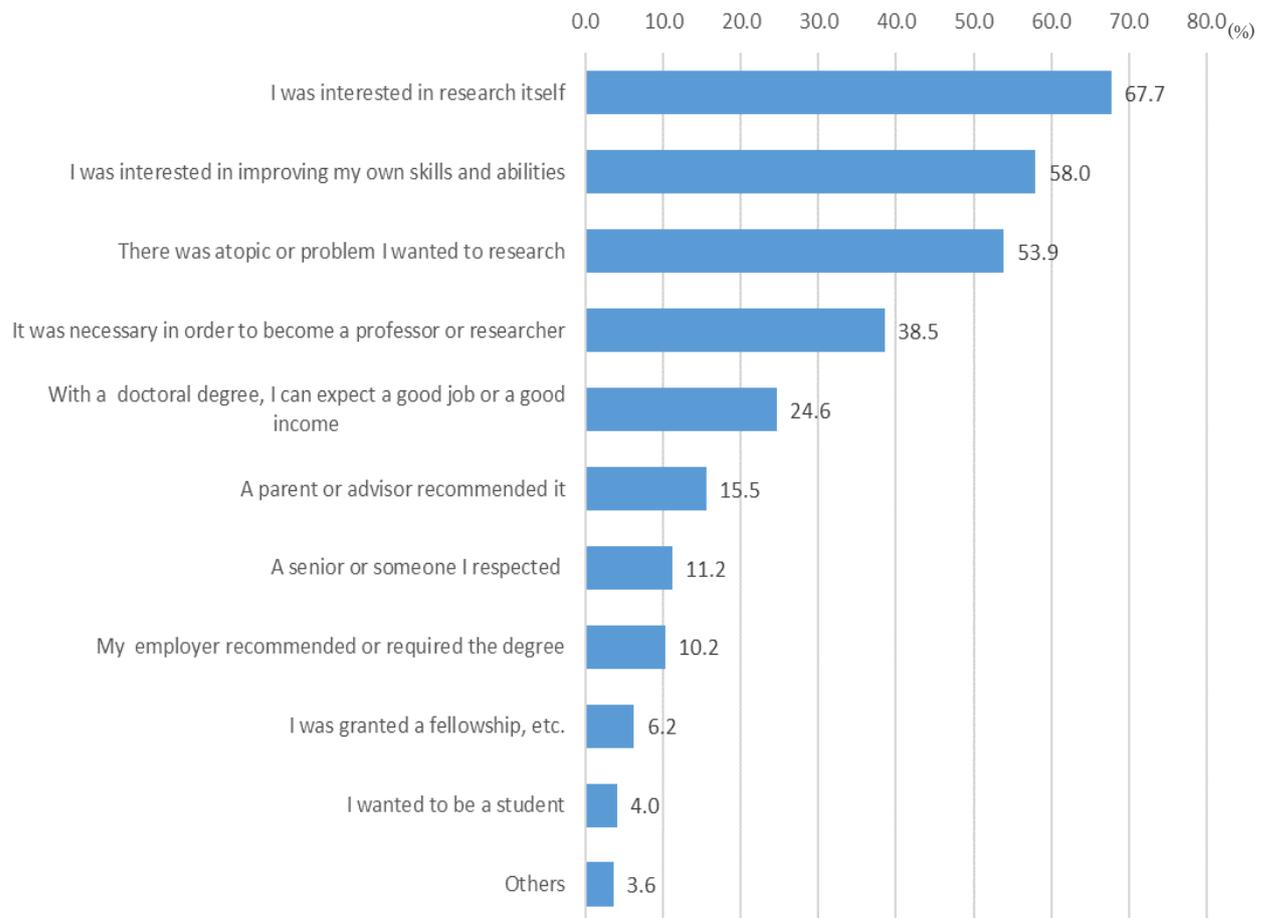
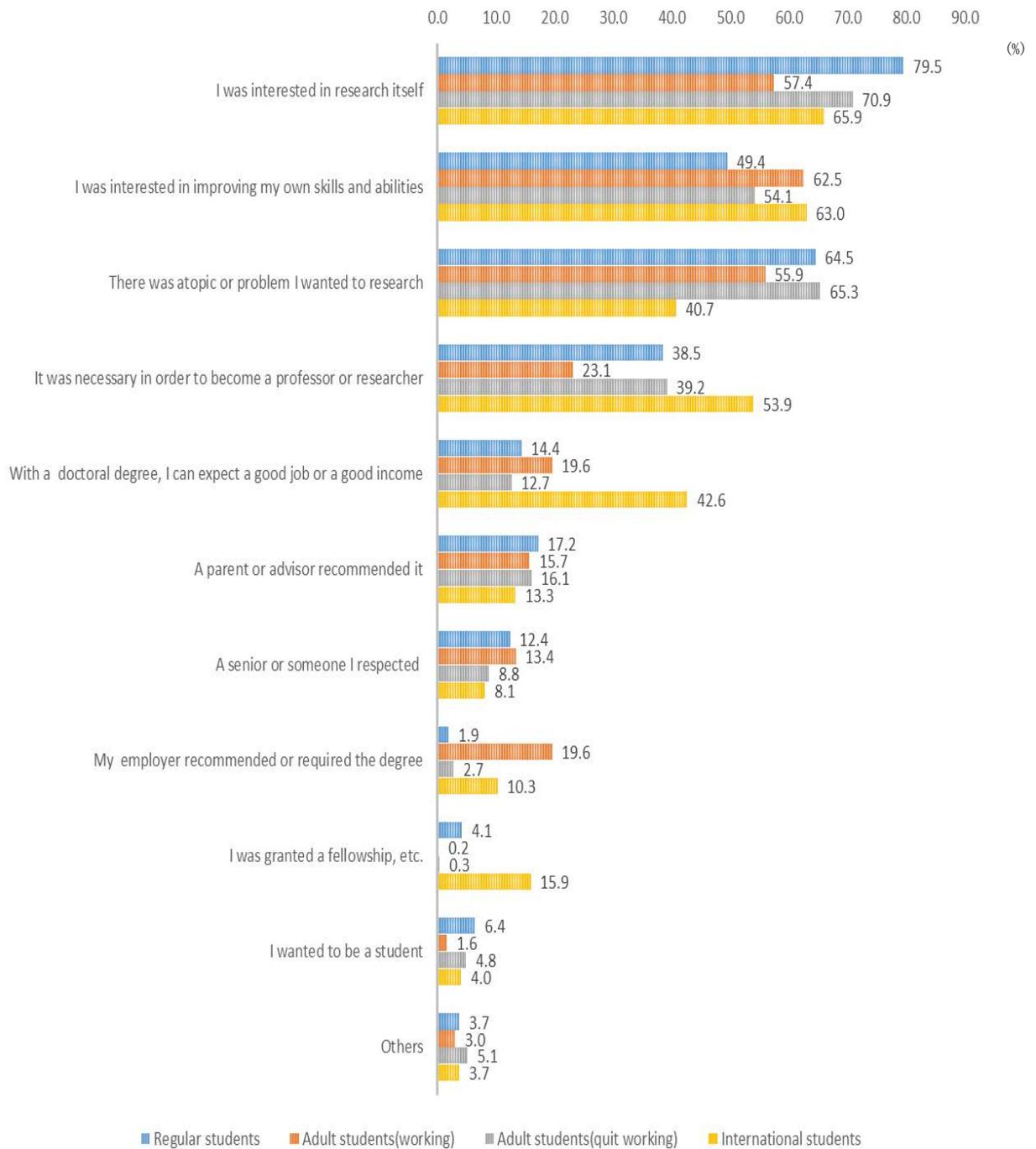


Figure in Abstract 9. Reasons for entering a doctoral course (according to student category)



Abstract 5. Tuition exemption during doctoral studies

When students were asked about tuition exemption during doctoral studies, 54.1% of the students did not receive a tuition exemption (Figure in Abstract 10). Even among students who received tuition exemptions, many only received partial exemptions. Of the 54.1% with exemptions, only 16.5% were complete. Of those who received complete exemptions, the highest percentage were foreign students (36.9%). According to discipline, the percentage of students who did not receive a tuition exemption was the highest in health care (72.8%). In the fields of agriculture, physics, and engineering, more than 50% of students indicated they received a partial or complete exemption (Figure in Abstract 11).

Figure in Abstract 10. Tuition exemption during doctoral studies (overall)

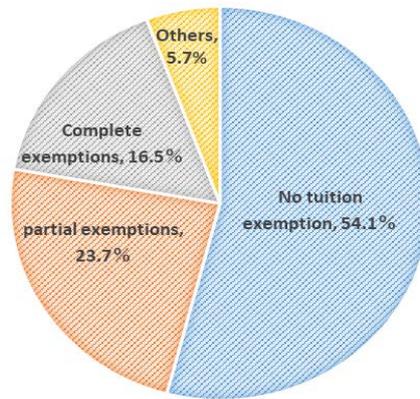
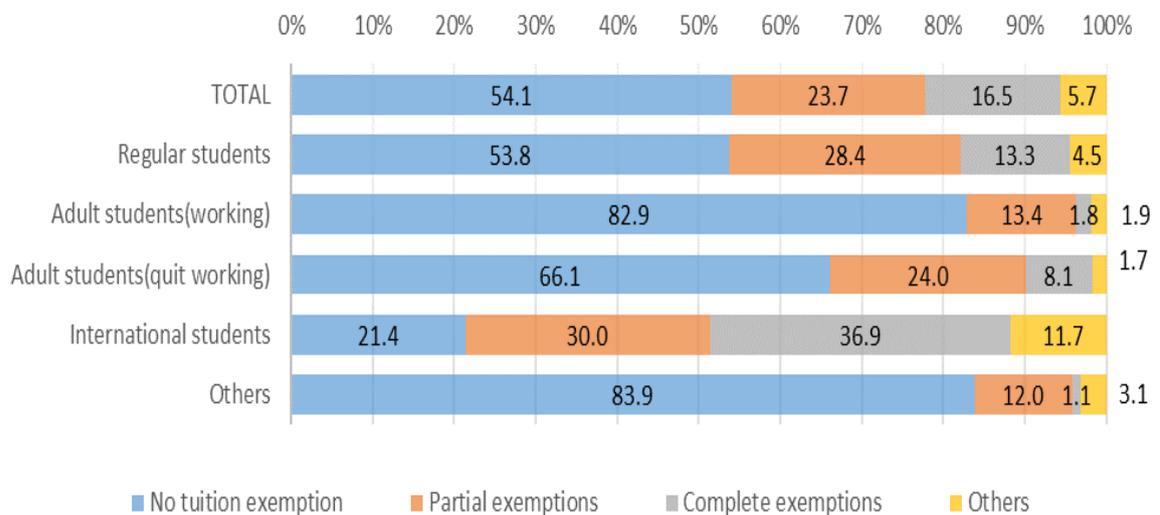


Figure in Abstract 11. Tuition exemption during doctoral studies (according to student category)



In the fields of science, technology, engineering, and mathematics (STEM), which includes agriculture and physics, the percentage of students who received partial or complete tuition exemptions exceeded 50%, which was higher than that of students in the fields of the humanities and sociology (Figure in Abstract 12). For students in the health care field, in which the percentage who had worked before beginning and during doctoral studies was high, less than 10% (7.5%) received complete exemptions. Of the students who received tuition exemptions, approximately one-third of the students indicated they received less than 300,000 yen (Figure in Abstract 13). In contrast, more than 30% of foreign students specified that their annual exemption amount exceeded 600,000 yen. Thus, the percentage of students receiving a tuition exemption and its annual amount was higher for foreign students than for Japanese students.

Figure in Abstract 12. Tuition exemption during doctoral studies (according to discipline)

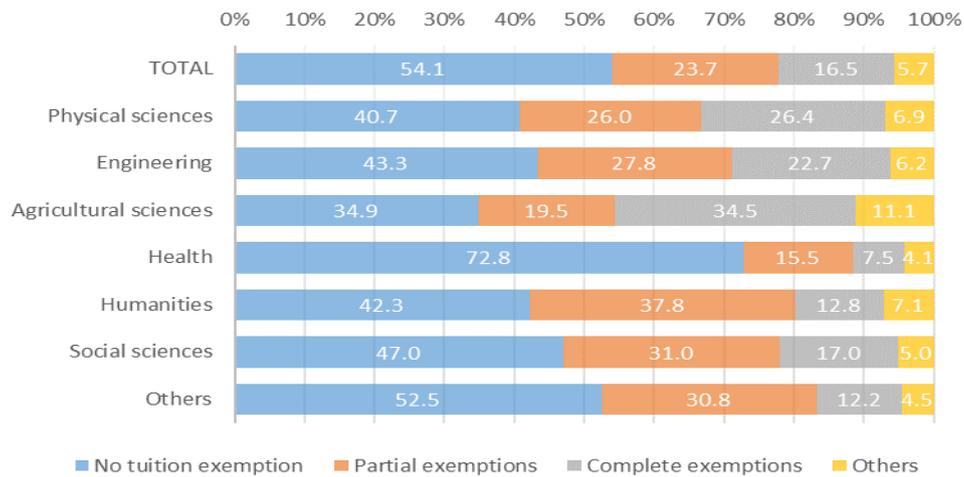
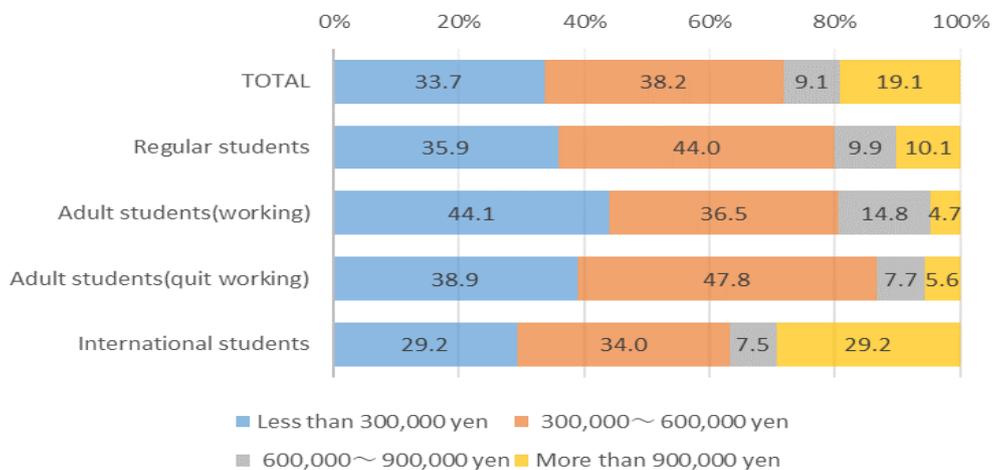


Figure in abstract 13. Tuition exemption amount during doctoral studies (according to student category)



Abstract 6. Accumulated debt during doctoral studies

When students were asked if they accumulated debt at the time of completing doctoral coursework, more than 20% revealed that the amount of accumulated debt exceeded 2 million yen (Figure in Abstract 14). Of these students, 17.4% indicated that the amount of accumulated debt exceeded 3 million yen. According to student category, more than 50% of doctoral students answered that they had accumulated debt. Of these students, 44.7% and 35.2% signified that the amount of accumulated debt exceeded 2 and 3 million yen, respectively (Figure in Abstract 15). Because of unstable financial conditions during doctoral studies, many master’s students avoid entering a doctoral course. A fellowship project launched in 2020 and other similar projects may improve this situation.

Figure in Abstract 14. Debt accumulated when completing doctoral coursework (overall)

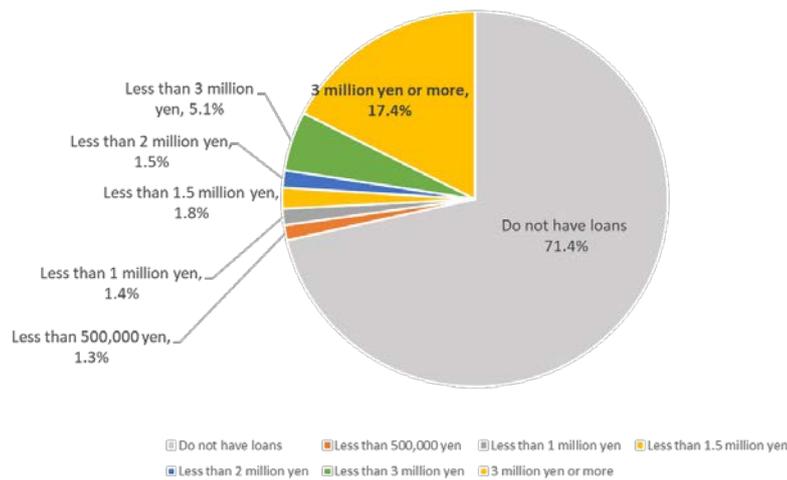


Figure in Abstract 15. Debt accumulation when completing doctoral coursework (according to the student category)



Abstract 7. Employment as part of the JSPS Research Fellowship for Young Scientists

When students were asked whether they had been employed by the Japan Society for the Promotion of Science (JSPS) Research Fellowship for Young Scientists during their doctoral studies, 4.7% of the students answered that they were employed as DC1, and 7.9% answered that they were employed as DC2 (Figure in Abstract 16). When analyzing by gender, the ratio of male students to female students was higher in both DC1 and DC2. According to age, more than 80% of the students were under 34 years old (Figure in Abstract 17). The JSPS age limit was abolished in 2014. However, the percentage of students older than age 30 who were employed by the JSPS Research Fellowship for Young Scientists was remarkably low.

Figure in Abstract 16. Employment situation as part of the JSPS Research Fellowship for Young Scientists

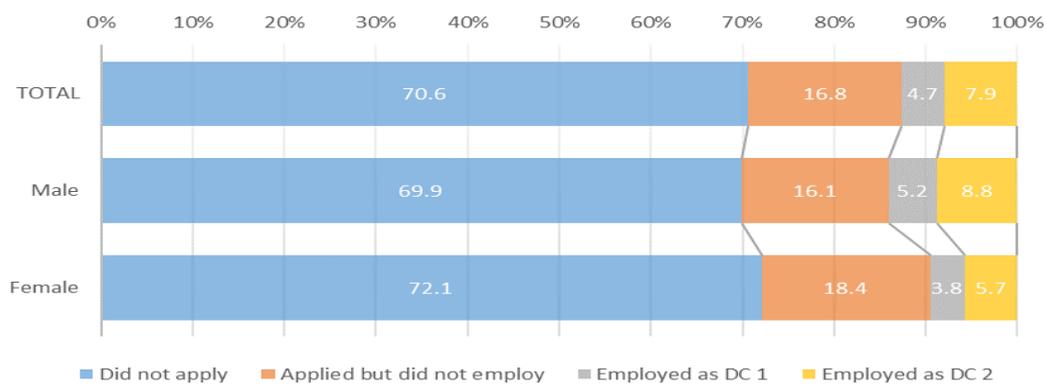
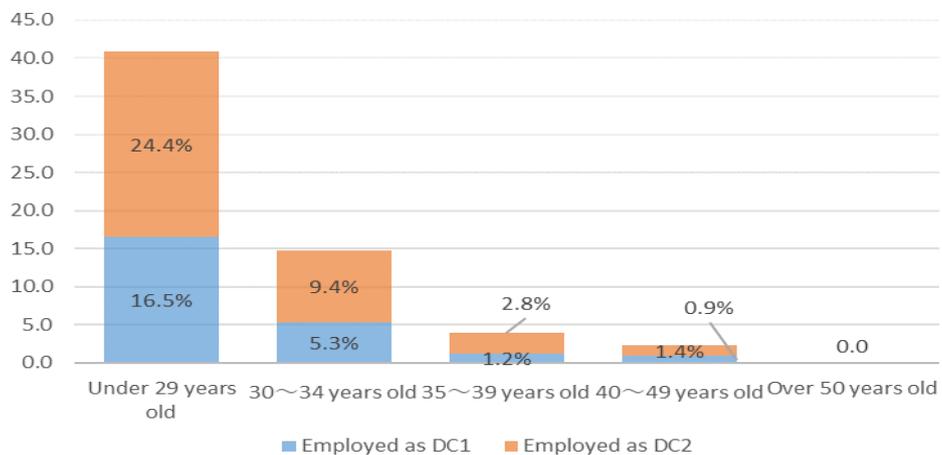


Figure in Abstract 17. Employment situation as part of the JSPS Research Fellowship for Young Scientists (according to age)



Abstract 8. Average research time per weekday during doctoral studies

When asked about the average research time per weekday during doctoral studies, the highest (29%) indicated they spent more than 8 h and less than 12 h researching, while 22% revealed they spent more than 5 h and less than 8 h completing research (Figure in Abstract 16). Of students who had worked before beginning doctoral studies, 37.3% signified that they spent more than 1 h and less than 3 h on research, while 10.8% disclosed spending less than 1 h. According to discipline, the percentages of students responding more than 15 h was approximately 10% in the fields of agriculture (10.7%) and engineering (9.6%). This suggests that for doctoral students in the fields of STEM, including agriculture and physics, the average research time tends to be prolonged (Figure in Abstract 17).

Figure in Abstract 18. Average research time per weekday during doctoral studies (according to student category)

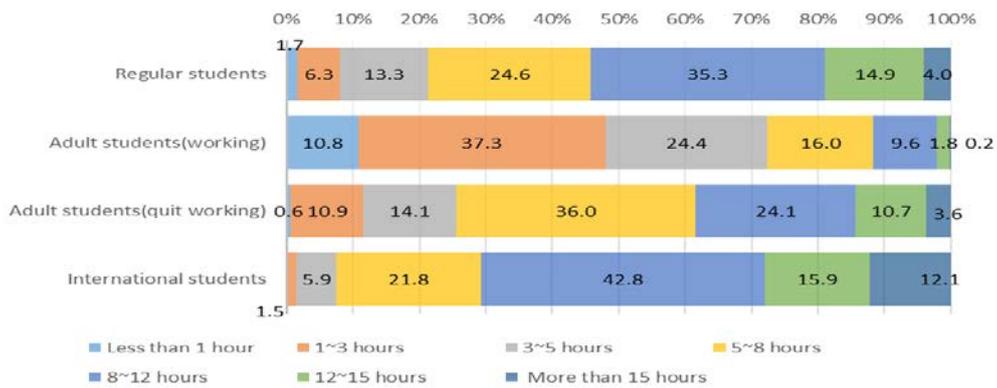
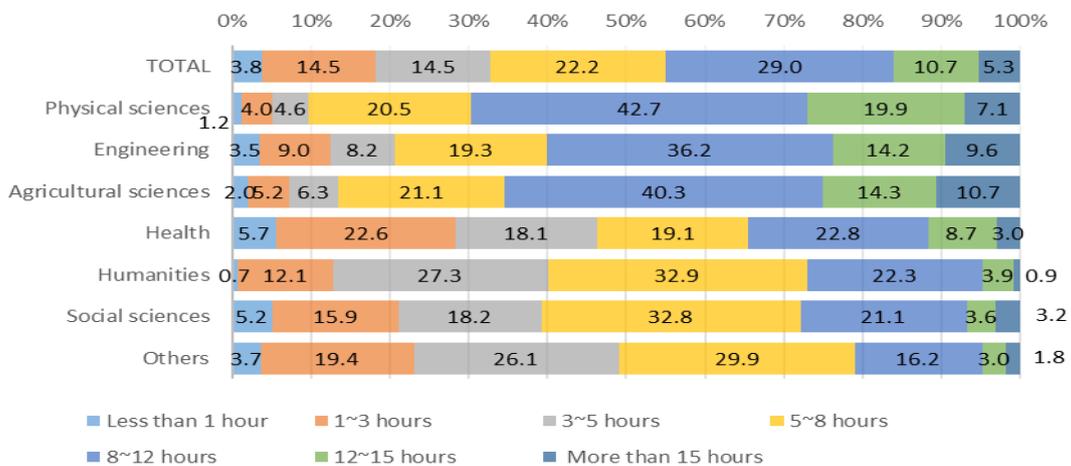


Figure in Abstract 19. Average research time per weekday during doctoral studies (according to discipline)



Abstract 9. Internship

13% of the surveyed students indicated they participated in an internship (Figure in Abstract 21). This percentage has not greatly changed since the first survey in 2012 (Figure in Abstract 20). Therefore, the use of internship programs in a doctoral course has not advanced. At present, the Ministry of Education, Culture, Sports, Science, and Technology is exploring an on-the-job research internship program because “the promotion of a long-term paid internship by collaboration with companies” and “the promotion of offering doctoral students credit for a long-term paid internship and of making a long-term paid internship an optional or compulsory subject” were evaluated as main policies in the Comprehensive Package to Strengthen Research Capability and Support Young Researchers (the Council for Science, Technology, and Innovation in January 2020). In the future, because of these policies, the number of students participating in internship programs is expected to increase, and the career path of students is expected to expand with internship experiences as a turning point.

Figure in Abstract 20. Internship (2012 cohort) Figure in Abstract 21. Internship (2018 cohort)

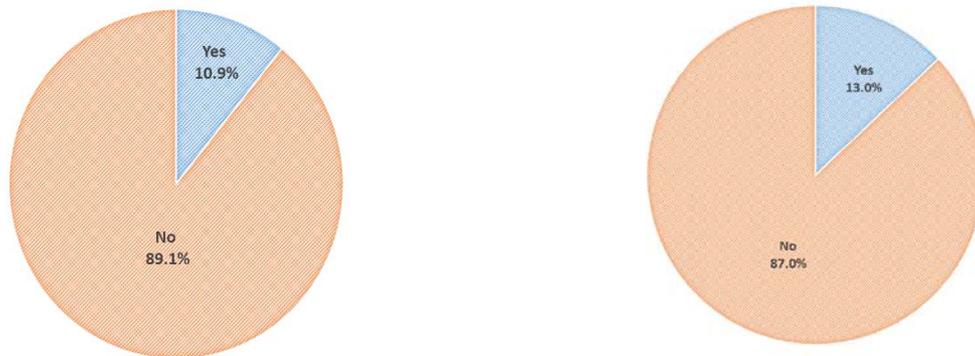
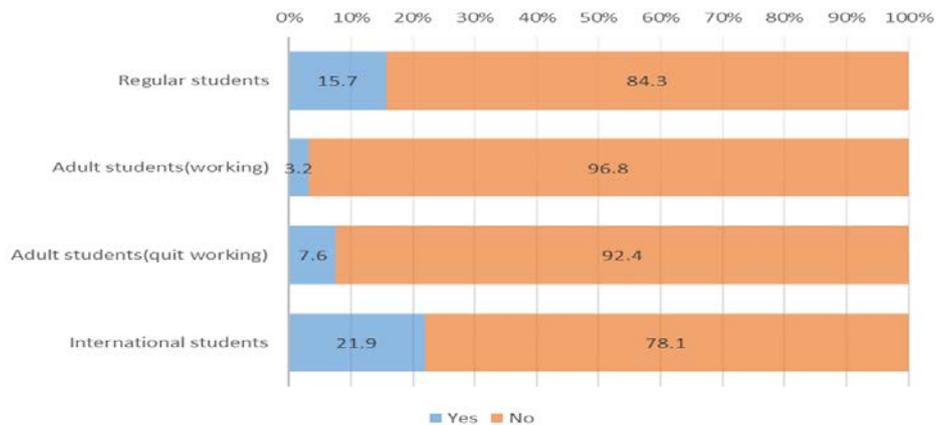


Figure in Abstract 22. Internship experience (the 2018 cohort according to student category)



Abstract 10. Type of doctoral degree obtained

The percentages of those who had obtained a doctoral degree in the 2018 cohort 1.5 years after completing doctoral coursework was 60.5% for those who obtained a doctoral degree after completing a course of study (hereinafter referred to as doctors) and 14.8% for those who obtained a doctoral degree by dissertation only (hereinafter referred to as doctors by dissertation) (approximately three-fourths of the 2018 cohort) (Figure in Abstract 23). The percentage of doctors by dissertation was high for foreign students (40.0%). According to discipline, the percentage of those who had obtained a doctoral degree was the highest in the field of engineering (85.6%). In the field of health care, the percentage of doctors was the highest (72.0%). For students studying the humanities, the aggregate percentage of doctors and doctors by dissertation was 43.8%. Thus, the percentage of those who obtained a doctoral degree after completing a course of study and by dissertation only was less than 50% (Figure in Abstract 24).

Figure in Abstract 23. Type of doctoral degree obtained (according to student category)

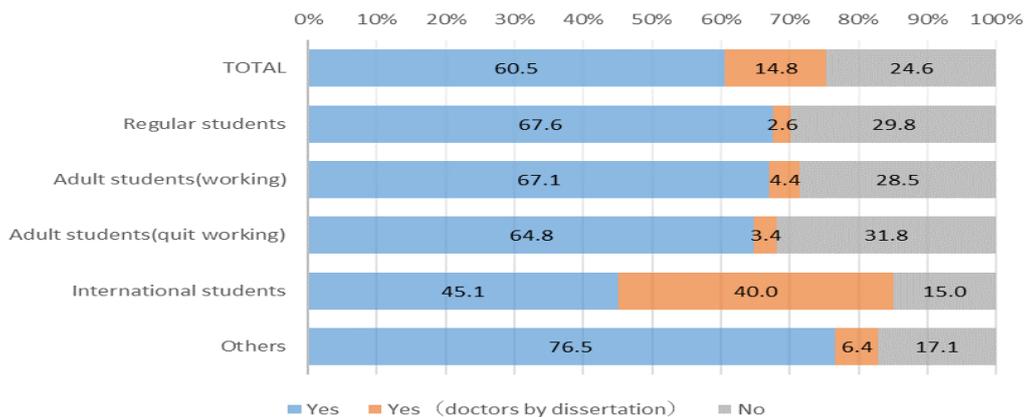
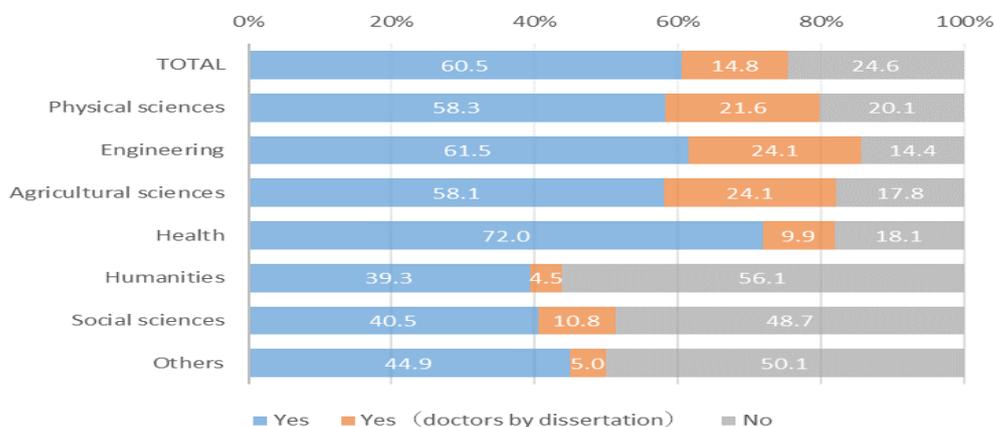


Figure in Abstract 24. Type of doctoral degree obtained (according to discipline)



Abstract 11. Employment after completing doctoral coursework

When asked about employment after completing their doctoral coursework, the highest percentage of students responded that they were employed by universities or the like,² followed by private companies, public organizations, and non-profit organizations, in that order (Figure in Abstract 25).

When ranked by discipline, the percentage of students employed by universities or the like was highest in the fields of the humanities (66.6%), sociology (57.0%), and health care (56.5%). The percentage of students who indicated being employed by private companies was highest in the fields of engineering (46.1%), physics (36.0%), and sociology (21.7%). Thus, the percentage of students employed by private companies was higher in the fields of science and technology than in the fields of human sciences (Figure in Abstract 26).

Figure in Abstract 25. Employment after completing doctoral coursework (overall)

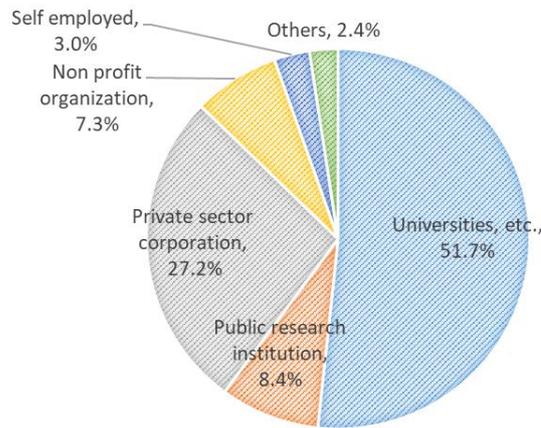
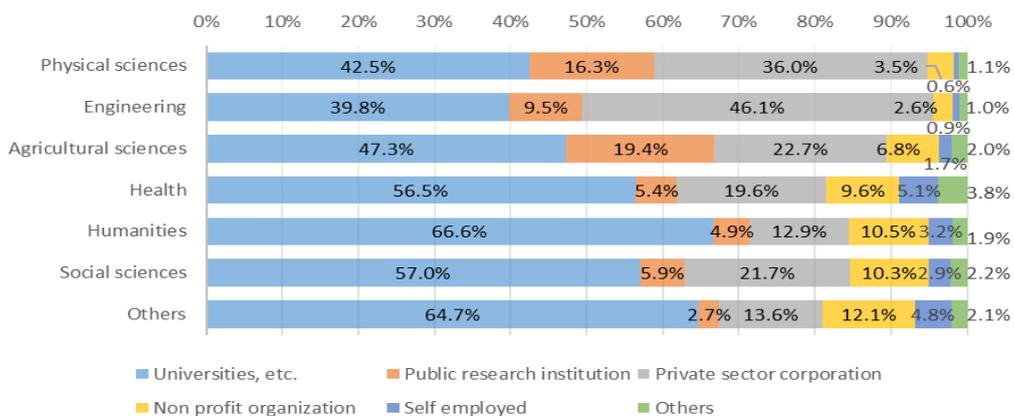


Figure in Abstract 26. Employment after completing doctoral coursework (according to discipline)

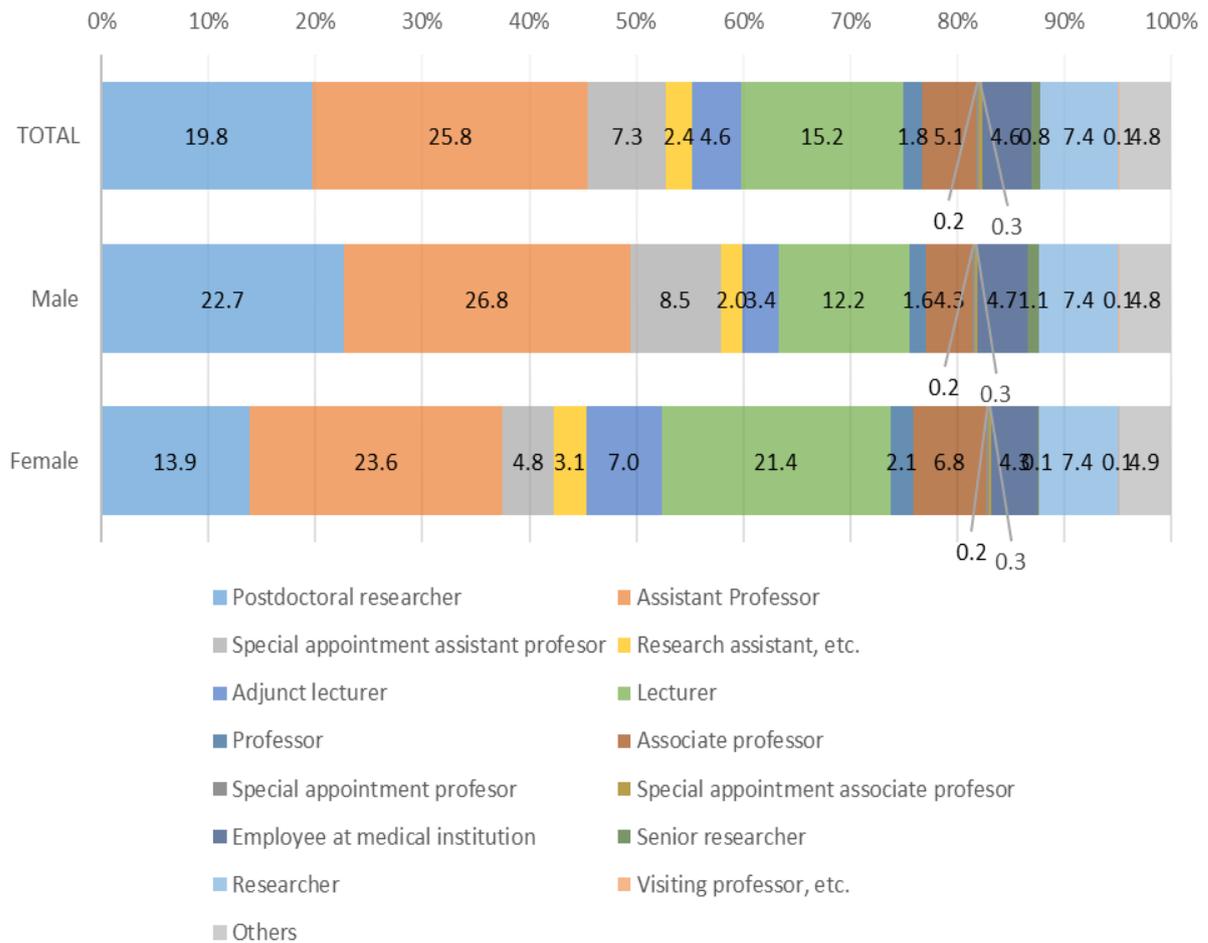


²Universities or the like indicate universities and technical colleges listed in the School Education Act (Act No. 26 of 1947).

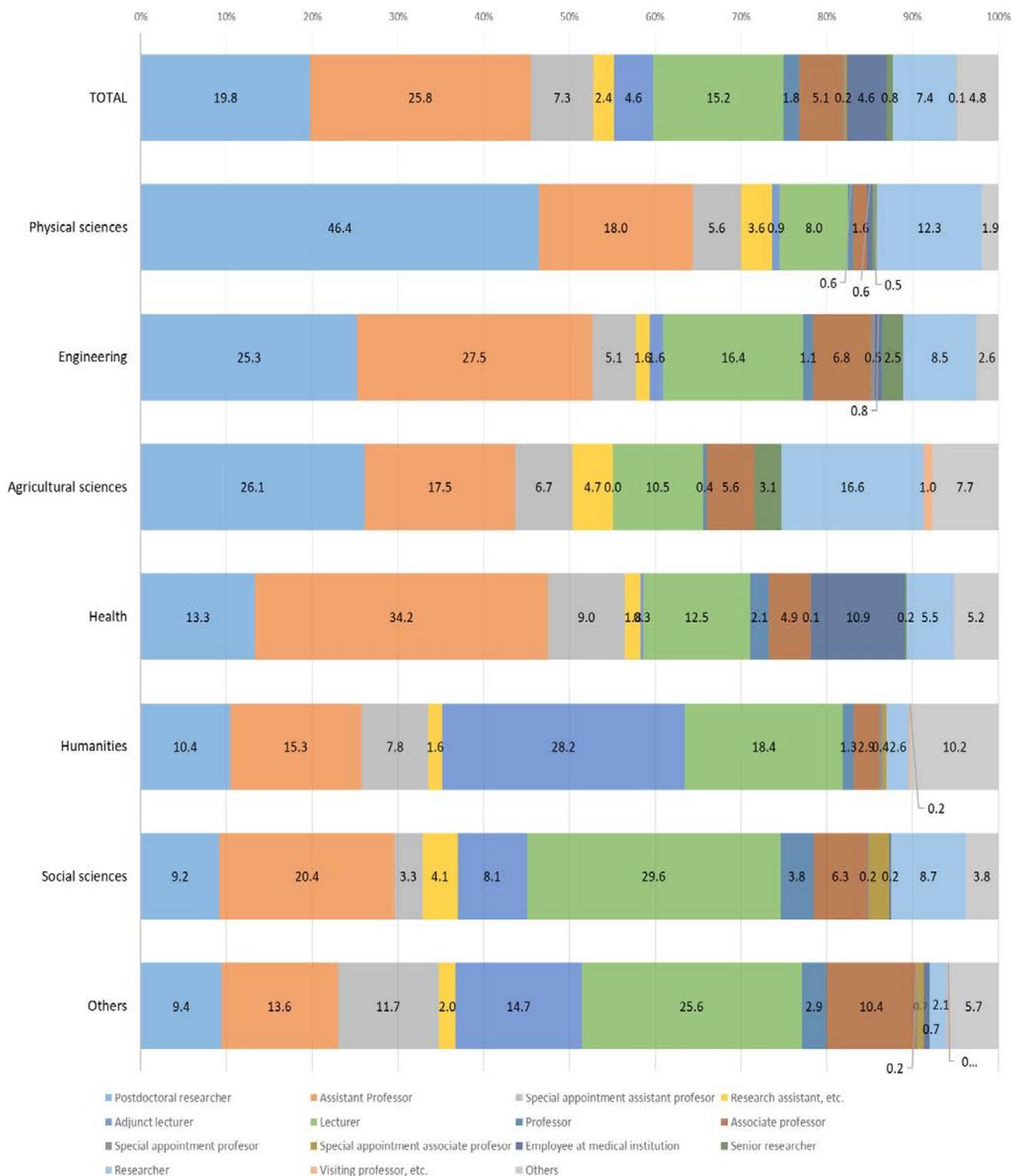
Abstract 12. Job titles at universities or the like and public research institutes

When asked to disclose their job titles at universities or the like and public research institutes, ts identified their titles as assistant professors (25.8%), post-doctoral researchers (19.8%), lecturers (15.2%), and research workers (7.4%), in that order (Figure in Abstract 27). Categorized by gender, the percentages of male and female post-doctoral researchers were 22.7% and 13.9%, respectively, and those of male and female assistant professors were 26.8% and 23.6%, respectively. Thus, the percentage of men was higher than that of women. The percentages of male and female lecturers were 12.2% and 21.4%, respectively. Thus, the percentage of women was higher than that of men. Broken down by discipline, the percentage of assistant professors was the highest in health care (34.2%), and that of post-doctoral researchers was the highest in physics (46.4%) (Figure in Abstract 28).

Figure in Abstract 27. Job titles at universities or the like and public research institutes (according to gender)



**Figure in Abstract 28. Job titles at universities or the like and public research institutes
(according to discipline)**



Abstract 13. Employment status and income

When asked about employment status, most students disclosed they were regular employees and staff members (68.8% of men and 63.4% of women, respectively), followed by contract employees (men: 23.4%, women: 23.7%), and part-time workers (men: 3.2%, women: 7.9%) (Figure in Abstract 29). In response to being asked about their annual income, the percentage of women earning 3–4 million yen was the highest, while of the percentage of men earning 4–5 million yen was the highest (Figure in Abstract 30). Regarding respondents who indicated earning an annual income higher than 8 million yen, the percentage of men was higher than that of women.

Figure in Abstract 29. Employment status in main employers (according to gender)

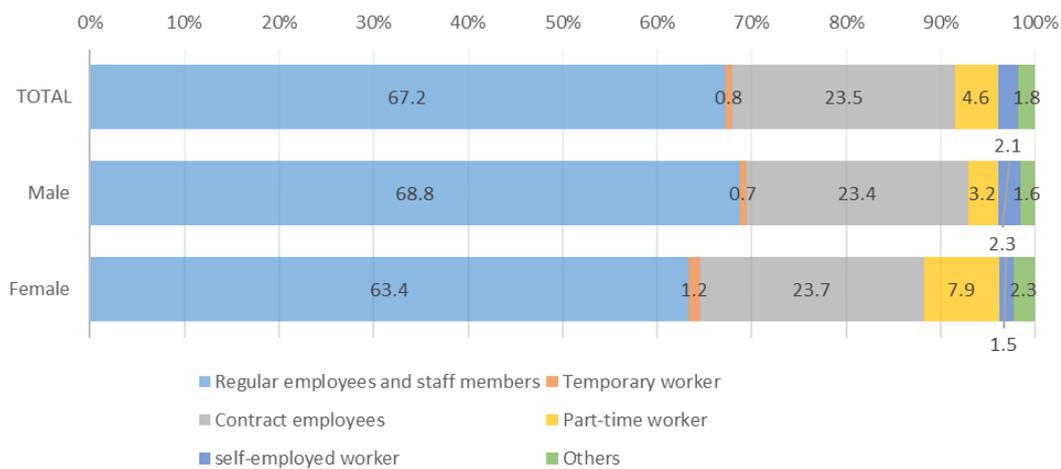
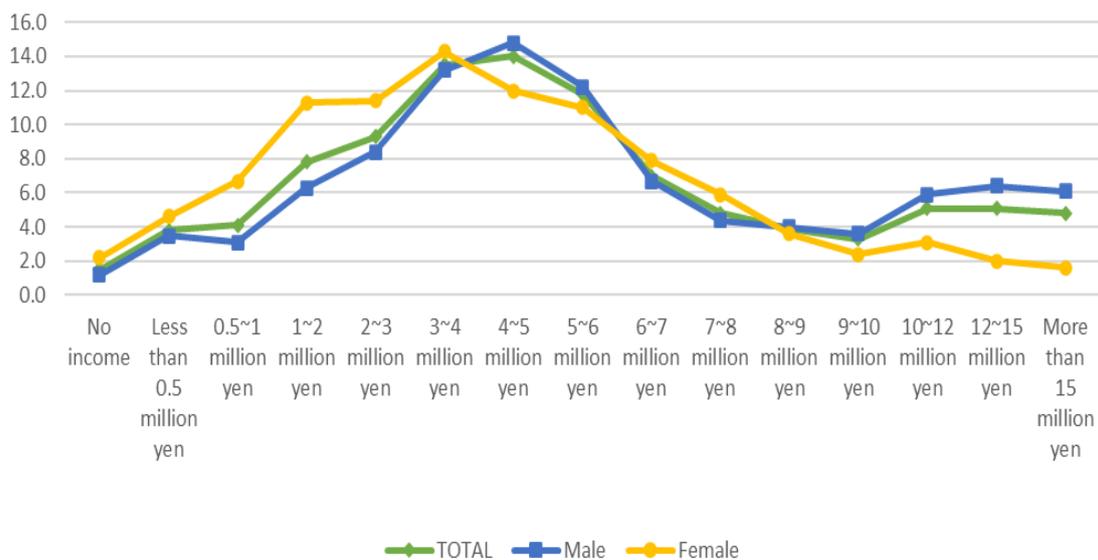


Figure in Abstract 30. Annual income in main employers (according to gender)



Regarding the employment status in each field, the percentage of regular employees and staff members exceeded 70% in the fields of engineering (76.2%) and health care (74.1%), in which the percentage of students who had worked before beginning doctoral studies was high. The percentage of regular staff members was highest in the fields of sociology (59.9%) and physics (59.3%) (Figure in Abstract 31). Regarding the annual income in each field, the percentage of those whose annual income exceeded 8 million yen was high in the fields of health care, sociology, and engineering (Figure in Abstract 32).

Figure in Abstract 31. Employment status in main employers (according to discipline)

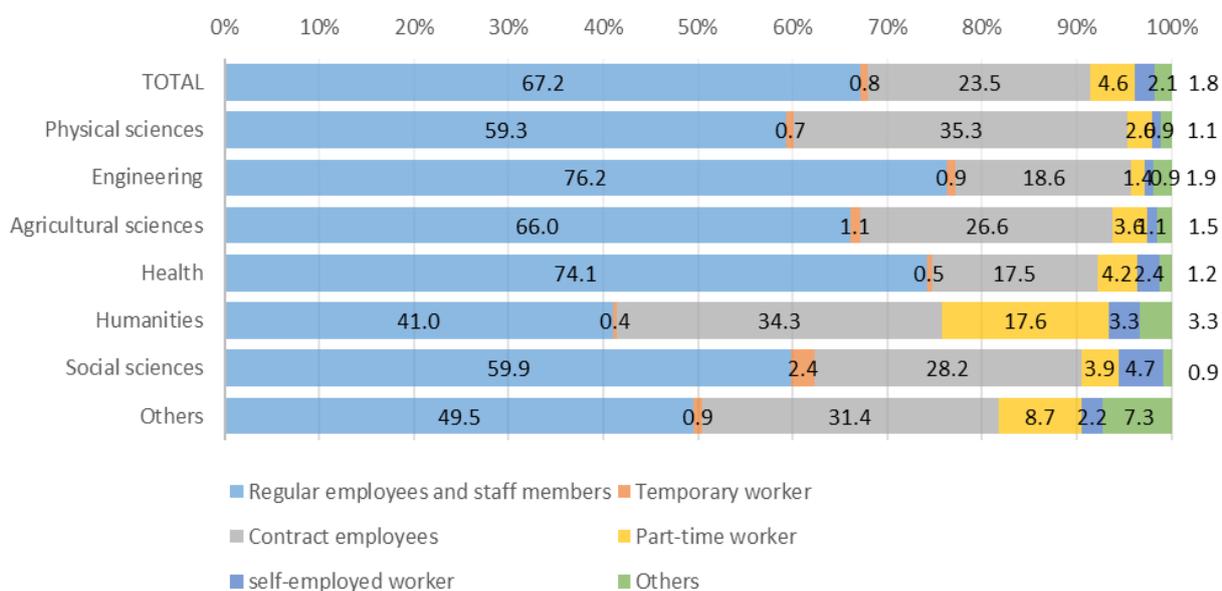
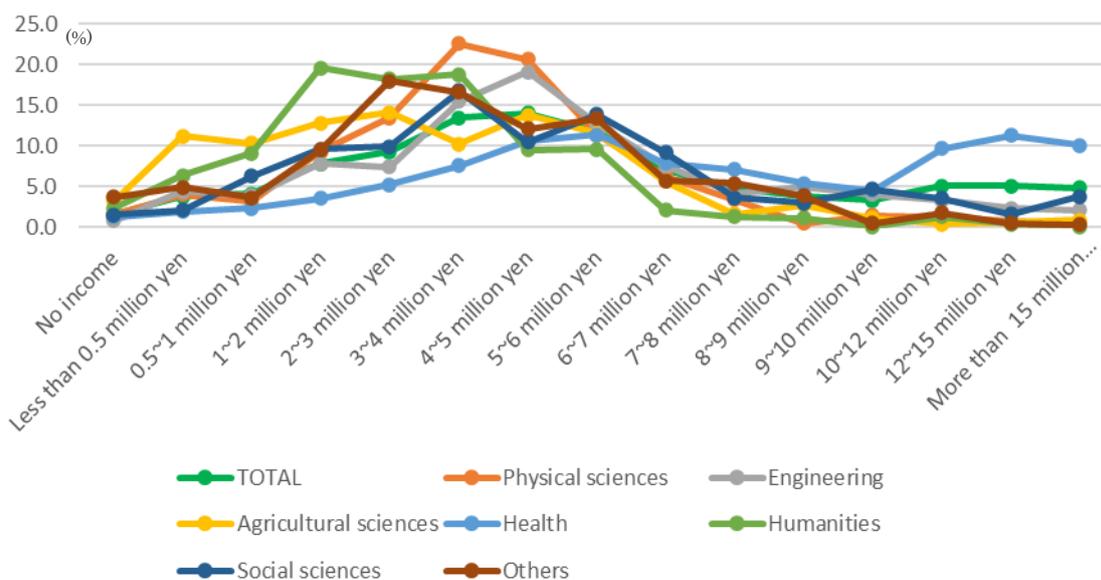


Figure in abstract 32. Annual income in main employers (according to discipline)



Abstract 14. Skills which students have obtained during doctoral studies and are useful for their current jobs

When asked to choose which skills obtained during doctoral studies were useful in their current jobs, 69.9% answered “logic and critical thinking skills,” 30.9% selected “data processing and utilization skills,” 24.2% responded “abilities to find and set problems in person,” and 20.8% indicated “abilities to establish a hypothesis and to verify it in person” (Figure in Abstract 33). As open-ended responses, “writing ability,” “patience,” “human networking,” and “presentation skills” were found multiple times. When asked how the skills obtained during their doctoral studies positively impacted their current work, more than 30% of the participants responded “the range of work has expanded” (35.8%) and another 30% responded “trust in my work has increased” (30.1%) (Figure in Abstract 34).

Figure in Abstract 33. Matters useful for current jobs (multiple answers allowed)

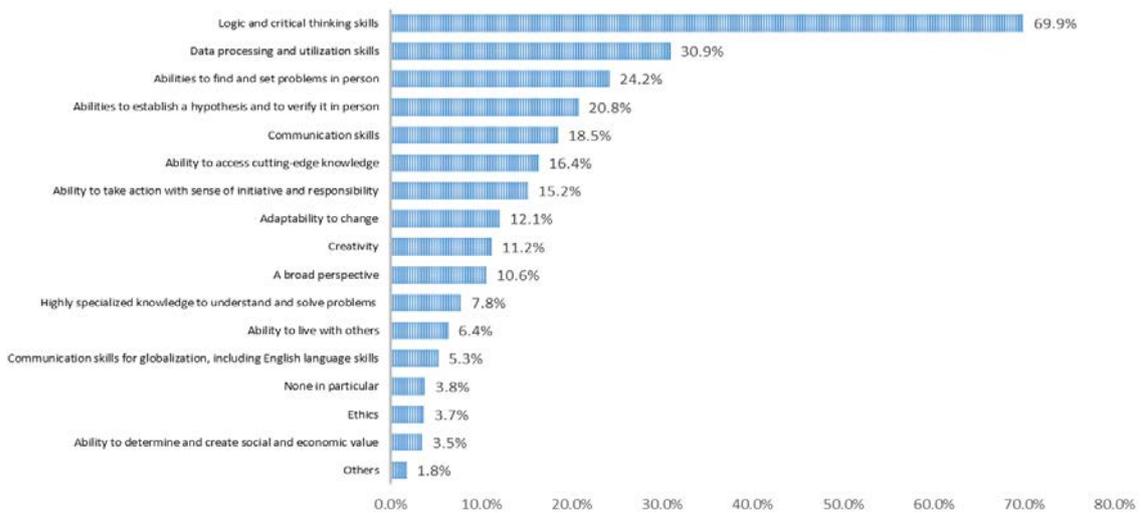
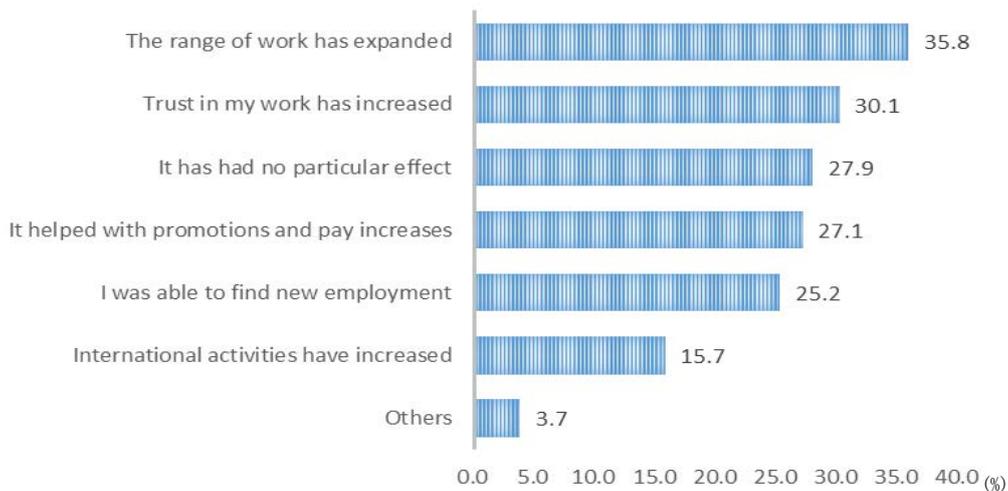


Figure in Abstract 34. Effects on current jobs



Abstract 15. Future career prospects

When asked about future occupational careers, the percentage of foreign students answering that they wanted to work at universities and public institutions as researchers was the highest (43.5%) (Schematic Diagram 35). Categorized by discipline, the percentage of students who wanted to get stable positions at universities or the like or public research institutes as researchers was high in the fields of sociology (48.6%) and the humanities (44.2%). In the field of health care, the percentage of students answering that any jobs other than research jobs were acceptable was high (24.0%) (Figure in Abstract 36).

Figure in Abstract 35. Prospects for future occupational career (according to student category)

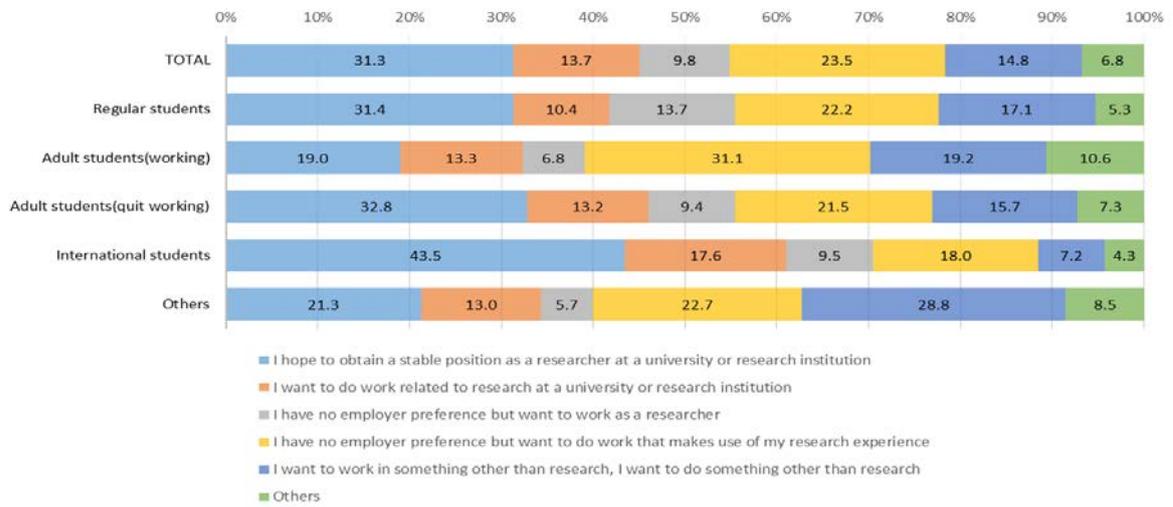
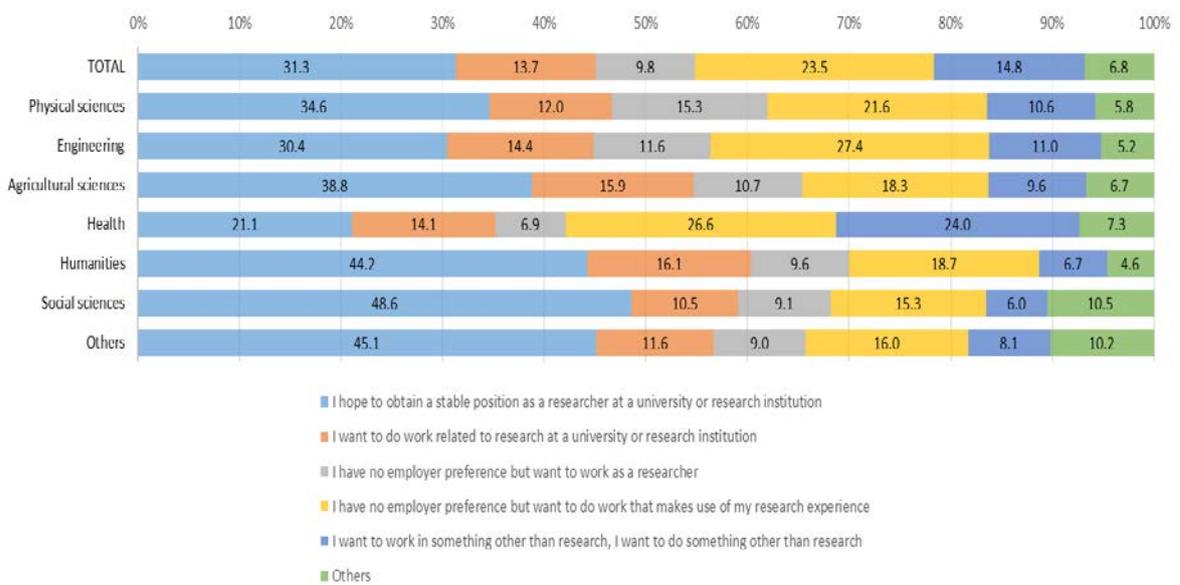


Figure in Abstract 36. Prospects for future occupational career (according to discipline)

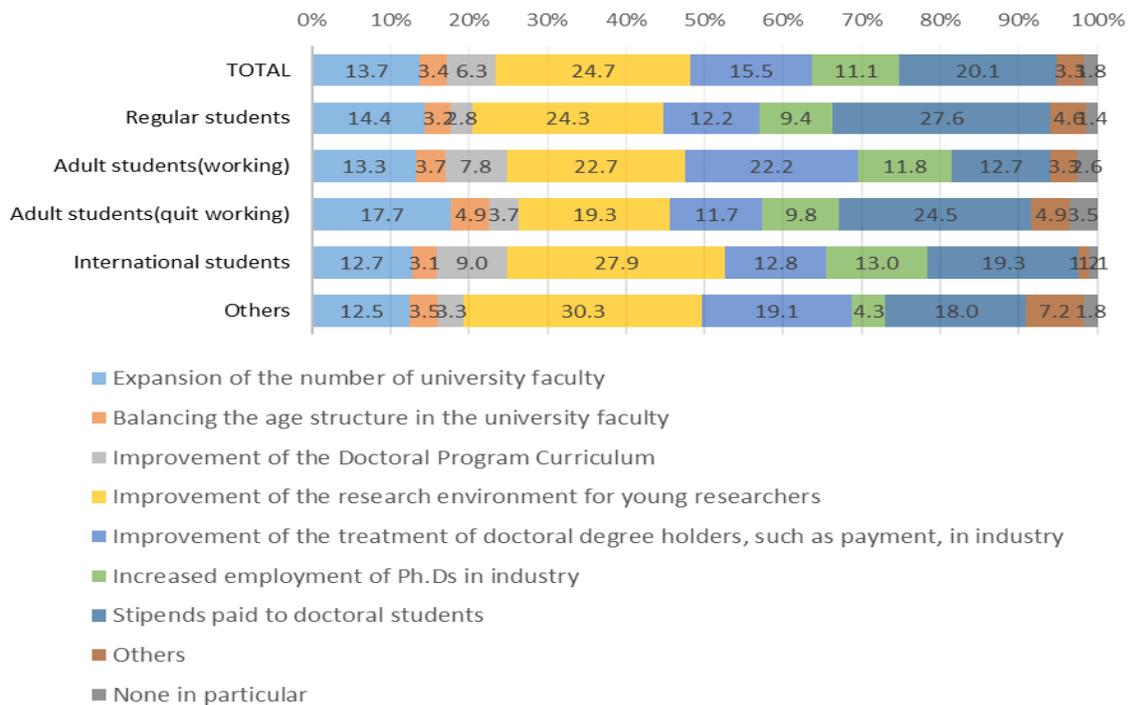


Abstract 16. Effective measures to increase the number of students entering a doctoral course

When asked what measures might be effective to increase the number of students entering a doctoral course, the highest percentage of students answered “the improvement of the research environment for young researchers” (24.7%), followed by “the stipends paid to doctoral students” (20.1%) and “the improvement of the treatment of doctoral degree holders, such as payment, in industry” (15.5%) (Figure in Abstract 37). According to student category, the percentage of doctoral students answering “the stipends paid to doctoral students” (27.6%) was slightly higher than those answering “the improvement of the research environment for young researchers” (24.3%). Therefore, many doctoral students needed an increase in financial support.

When responding to open-ended questions, many students requested the expansion of financial support systems, such as “the formulation (expansion) of an effective system for interest-free or non-returnable scholarships instead of accumulated debt for Japanese students,” “complete exemption from school expenses,” and “stipends paid to graduate students, including master’s students.” Many students also requested measures to increase the number of students who obtain a doctoral degree and ways to improve of the treatment of doctoral degree holders in industry, such as “the optimization of employee training curricula in companies,” “the promotion of on-the-job employment in industry,” and “the encouragement of domestic industry by making use of high skilled personnel.”

Figure in Abstract 37. Effective measure to increase the number of students entering a doctoral course



Part I Japan Doctoral Human Resource Profiling project

1. Purpose and outline of the project

1-1 Purpose of the project

In Japan, the number of students beginning doctoral coursework reached a peak of 18,232 in 2003, before decreasing to 14,976 in 2019. The reasons for this decrease are, among others, insufficient financial support and similar considerations during doctoral studies, the unclear career path of those who have completed doctoral coursework,³ and Japan's unstable employment situation. Moreover, the percentage of students who enter a doctoral course immediately after completing a master's program decreased from 18.7% in 1981 to 9.2% in 2019. The trend of many brilliant master's students leaving academia without entering a doctoral course has become obvious.

The Sixth Science, Technology, and Innovation Basic Plan, adopted at a Cabinet meeting in March 2021, set the goal that when brilliant youths can anticipate the prospect of future success, the career path system for students to enter a doctoral course as bearers of "intellect" shall be enhanced. The Japanese government has taken specific measures to improve the treatment of researchers based on the Comprehensive Package to Strengthen Research Capability and Support Young Researchers.

The National Institute of Science and Technology Policy (NISTEP) has carried out the Japan Doctoral Human Resource Profiling (JD-Pro) project since 2014. The JD-Pro project has continuously followed the career paths of doctoral graduates, aiming to contribute to policy development by providing objective evidence from the situations of students before they enter doctoral courses, the experiences they have while pursuing a doctoral degree, their employment status after completing doctoral coursework, and their status as researchers after graduation.

1-2 Outline of the project

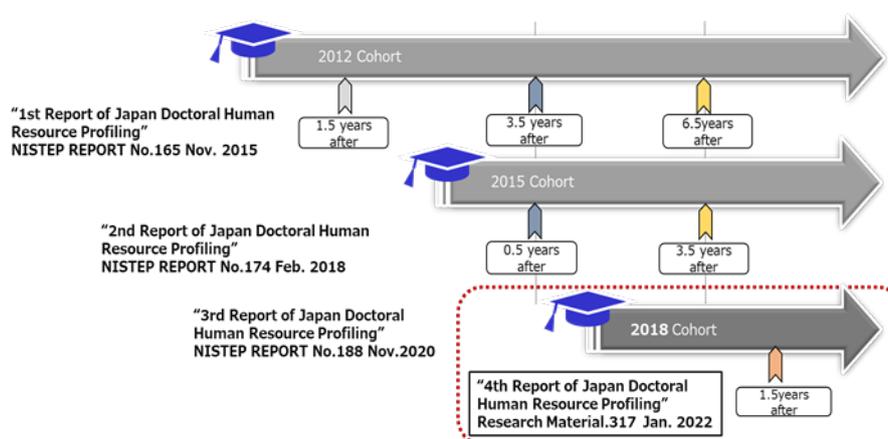
At present, the JD-Pro project is surveying the following three cohorts:

- 1) Those who have completed doctoral coursework at Japanese universities in 2012 (hereinafter referred to as the 2012 cohort).
- 2) Those who have completed doctoral coursework at Japanese universities in 2015 (hereinafter referred to as the 2015 cohort)
- 3) Those who have completed doctoral coursework at Japanese universities in 2018 (hereinafter referred to as the 2018 cohort).

In 2021, the JD-Pro project surveyed the 2018 cohort 1.5 years after completing doctoral coursework.

³Those who have completed doctoral coursework indicate doctoral graduates (including those who have completed a doctoral program without dissertation) in the School Basic Survey.

Figure 1-1 Schematic diagram of the project



Subjects

2018 cohort (1.5 years after completing doctoral coursework)

Of those who had completed doctoral coursework at all universities in the 2018 fiscal year (April 1, 2018–March 31, 2019),⁴ those who satisfied the following conditions were used as subjects:

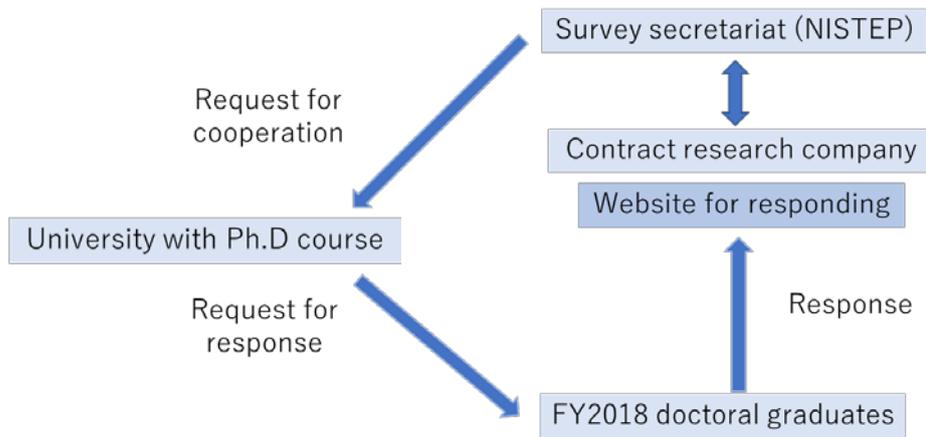
- The acquisition of a doctoral degree is not required.
- When a doctoral course is divided into the first half and the second half, a doctoral course indicates the second half.
- Those who have graduated from the faculties of medicine, dentistry, pharmacy, and veterinary medicine, which require six years to complete a bachelor's degree program, are considered to have completed a four-year doctoral course.
- Those who have acquired a doctoral degree without enrolling in a doctoral course (doctors by dissertation) are excluded.

Survey methods

This time, because we were not given access to contact information for each subject, we asked each university to provide each subject of the URL of the web system for responses. We sent the survey instructions to each subject through email and received responses through the website for responses. We accepted the submission of the questionnaire by mail or email if required.

⁴Doctoral graduates (including those who have completed a doctoral program without dissertation) in the School Basic Survey

Figure 1-2 Methods of the project



Survey period

The survey period was from November 7, 2020, to December 9, 2020.

Survey contents

The survey contents investigated employment status, career consciousness, and research situation.

Survey support

The survey was supported by the Public Service Division and Social Business Promotion Division of INTAGE Research, Inc.

Collection state

2018 cohort

Number of subjects: 15,658

Number of responses: 3,894 (response rate: 24.9%)

Because the participation of each subject in the survey depended on their intention, response bias might exist. To remove this bias as much as possible, calibration weights were built⁵ for tabular analysis.

In addition, questions in the questionnaire have been flexibly amended and added based on changing situations and requests from the policy authorities regarding the current survey or feedback from previous surveys. Therefore, the intent of the survey questions remains the same as in previous surveys for competitive analysis; however, it should be noted that the contents of some questions in the present survey may differ from those in previous surveys.

⁵ Calibration weights were built by Professor Takahiro Tsuchiya of the Department of Data Science, Yokohama City University.

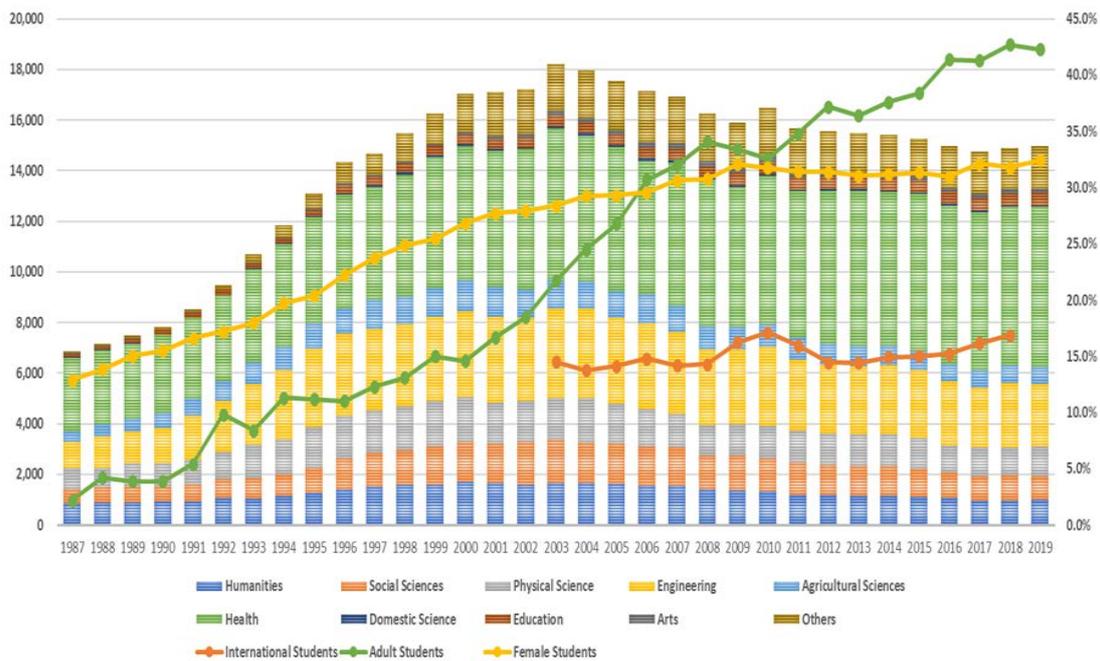
2. General situation of doctoral courses

2-1 Changes in the number of students beginning doctoral coursework

The number of students beginning doctoral coursework reached a peak of 18,232 in 2003, before decreasing to 14,976 in 2019. In the field of agriculture, the number of students beginning doctoral coursework in 2003 decreased from that in 2000 by approximately 44%. In the field of social science, the number of students beginning doctoral coursework decreased by approximately 43%. In the field of human science, the number of students beginning doctoral coursework decreased by approximately 41%. In the field of physics, the number of students beginning doctoral coursework decreased by approximately 33%. In contrast, the number of students beginning doctoral coursework increased by approximately 32% in the field of education. The number of students beginning doctoral coursework increased by approximately 19% in the field of health care. Particularly, in the field of health care, the number of students beginning doctoral coursework has steadily increased since 2012.

The percentage of students who worked before beginning doctoral studies has increased year by year. In 2006, this percentage exceeded 30%. In 2016, it exceeded 40%. In 2019, the number of students who had worked before beginning doctoral studies accounted for 42.3% of all students beginning doctoral coursework. The percentage of female students beginning doctoral coursework exceeded 30% in 2007. Since then, this percentage has continuously been around 30%. In 2019, it reached 32.4% (Figure 2-1).

Figure 2-1. Number of students beginning doctoral coursework, the percentage students who worked before beginning doctoral studies



Sources: The Report of the School Basic Survey and a survey by the Ministry of Education, Culture, Sports, Science, and Technology

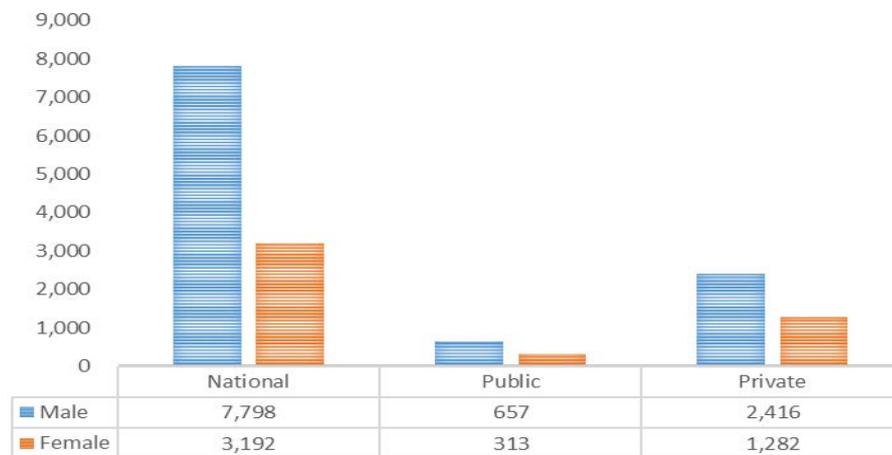
2-2 Attributes of those who have completed doctoral coursework (2018)

In 2018, of those who had completed doctoral coursework, 10,871 were men, and 4,787 were women (a total of 15,658). The percentage of female students was 30.0% in 2012 and 31.0% in 2015. The percentage of students at national universities was 70.0% in 2012 and 70.3% in 2015 (Figures 2-2 and 2-3).

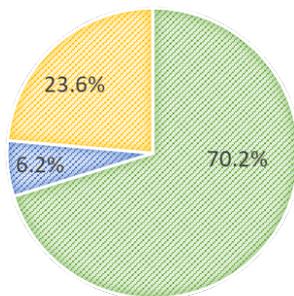
Figure 2-2 Attributes of those who have completed doctoral coursework (2018)

	Male	Female	Total	%
National	7,798	3,192	10,990	70.2%
Public	657	313	970	6.2%
Private	2,416	1,282	3,698	23.6%
Total	10,871	4,787	15,658	100%
%	69.4%	30.6%		

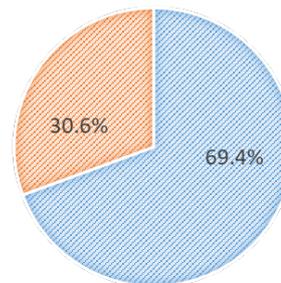
Figure 2-3. Numbers of male and female graduates according to the university type, the number of universities, and sex



Legend: National (Green), Public (Blue), Private (Yellow)



Legend: Male (Blue), Female (Orange)

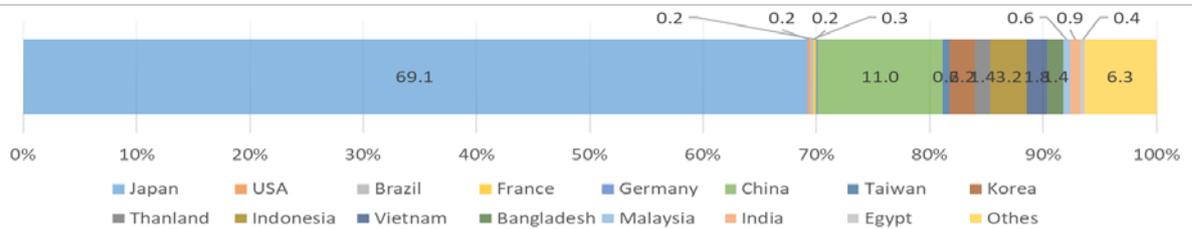


Source: The School Basic Survey in 2018

2-3 Basic attributes of the subjects

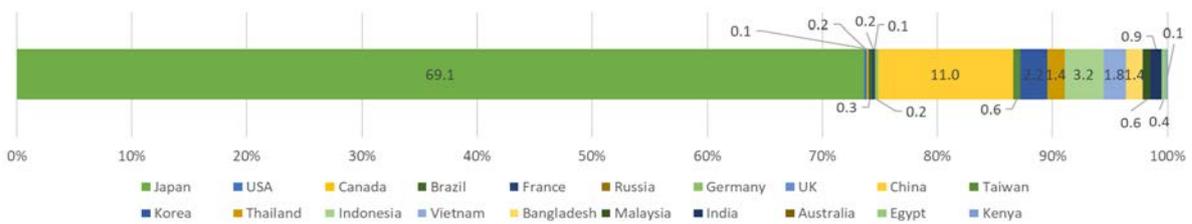
The basic attributes of the subjects in this survey (2018_1.5 cohort) are as follows:

2-3-1 Nationality



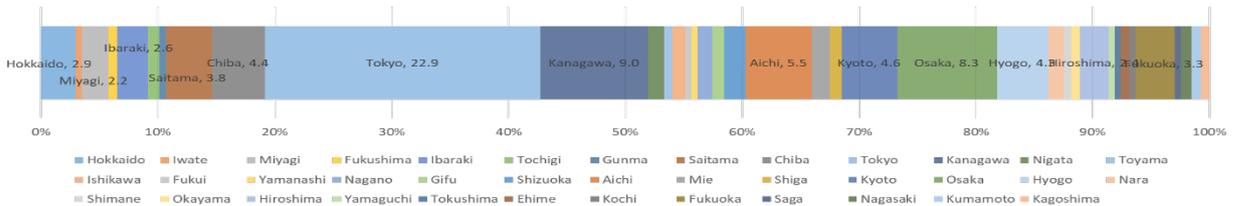
In terms of the subjects' nationalities, the percentage of Japanese was the highest (69.1%), followed by Chinese (11%), Indonesian (3.2%), South Korean (2.2%), and Vietnamese (1.8%).

2-3-2 Current countries of residence



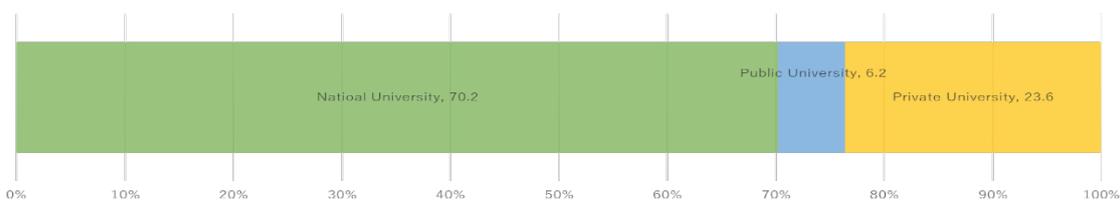
When considering the subjects' current countries of residences, the percentages of the subjects living in Japan was the highest (80.0%), followed by China (4.9%), Indonesia (3.1%), the United States (2.2%), and Bangladesh (0.9%).

2-3-3 Current residential areas



In terms of their current residential areas, the percentage of the subjects living in the Tokyo Metropolitan Area was the highest (22.9%), followed by Kanagawa Prefecture (9.0%), Osaka Prefecture (8.3%), Aichi Prefecture (5.5%), and Chiba Prefecture (4.4%).

2-3-4 Universities from which the subjects have graduated (according to university type)



The percentage of subjects who graduated from national universities was the highest (70.2%), followed by private universities (23.6%), and public universities (6.2%).

2-4 Terms used in this report

2-4-1 Survey cohort

The first survey of JD-Pro was conducted in 2014 and included those in the 2012 cohort after 1.5 years had passed. The survey results were summarized in the First Report in 2015. In 2016, the 2012 cohort was surveyed after 3.5 years had passed, 0.5 years after completing doctoral coursework in 2015. The survey results were summarized in the Second Report in 2018. In the third survey in 2019, the 2012 cohort after 6.5 years had passed and the 2015 cohort after 3.5 years had passed were included. The survey results were summarized in the Third Report in 2020.

The 2018 cohort after 1.5 years had passed was surveyed in 2020, and the survey results were summarized in Fourth Report of Japan Doctoral Human Resource Profiling.

Presently, the following data have been collected. In the figures below, the collected data are expressed as follows:

(First survey)

“The 2012 cohort after 1.5 years had passed” → 2012_1.5 years later

(Second survey)

“The 2012 cohort after 3.5 years had passed” → 2012_3.5 years later

“The 2015 cohort after 0.5 years had passed” → 2015_0.5 years later

(Third survey)

“The 2012 cohort after 6.5 years had passed” → 2012_6.5 years later

“The 2015 cohort after 3.5 years had passed” → 2015_3.5 years later

(Fourth survey)

“The 2018 cohort after 1.5 years had passed” → 2018_1.5 years later

2-4-2 University groups

In this survey, universities were classified into national, private, and public. In some analyses, the following classification was used in accordance with intensive support measures provided by the Ministry of Education, Culture, Sports, Science, and Technology.

Intensive support for national universities (a): Promotion of research and developing human resources who can cope with local needs.

National universities other than those in (b) and (c) below

Intensive support for national universities (b): Promotion of establishing excellent education and research bases in each field and forming the network of these bases.

Tsukuba University of Technology, Tokyo Medical and Dental University, Tokyo University of

Foreign Studies, Tokyo Gakugei University, Tokyo University of the Arts, Tokyo University of Marine Science and Technology, Ochanomizu University, the University of Electro-Communications, Nara Women’s University, Kyushu Institute of Technology, National Institute of Fitness and Sports in Kanoya, National Graduate Institute for Policy Studies, the Graduate University for Advanced Studies, Japan Advanced Institute of Science and Technology, and Nara Institute of Science and Technology

Intensive support for national universities (c): Promotion of prominent education and research in order to stay competitive with best universities worldwide.

Hokkaido University, Tohoku University, the University of Tsukuba, Chiba University, the University of Tokyo, Tokyo University of Agriculture and Technology, Tokyo Institute of Technology, Hitotsubashi University, Kanazawa University, Nagoya University, Kyoto University, Osaka University, Kobe University, Okayama University, Hiroshima University, and Kyushu University.

Public: Public universities

Private: Private universities

2-4-3 Classification of student categories

In this survey, student categories were analyzed using the following classification:

	Nationality	Experience of work before beginning doctoral studies	Situation of work
Regular students	Japanese	No	
Students who have worked before beginning doctoral studies (working)		Yes	Working and temporarily retiring
Students who have worked before beginning doctoral studies (quit working)			Quitting a job
International students	All the International students		

Part II Main Results

3. Increase in the number of students who worked before beginning doctoral studies

3-1 Changes in the percentage of students who have worked before beginning doctoral studies

The percentage of students who worked before beginning doctoral studies has increased in the health care field since 2003, reaching 64.8% in 2019 (Figure 3-1). The reason for this is likely because those who are already working in the medical field can enter graduate schools in parallel to attending clinical internship programs. The number of students who have worked before beginning and during doctoral studies has also increased. In contrast, the percentage of students who worked before beginning doctoral studies has remained the same level in the fields of physics (10.8%) and engineering (30.7%). Thus, this percentage greatly differs according to discipline.

Figure 3-1. Changes in the percentage of students who worked before beginning doctoral studies according to discipline (2000–2019)

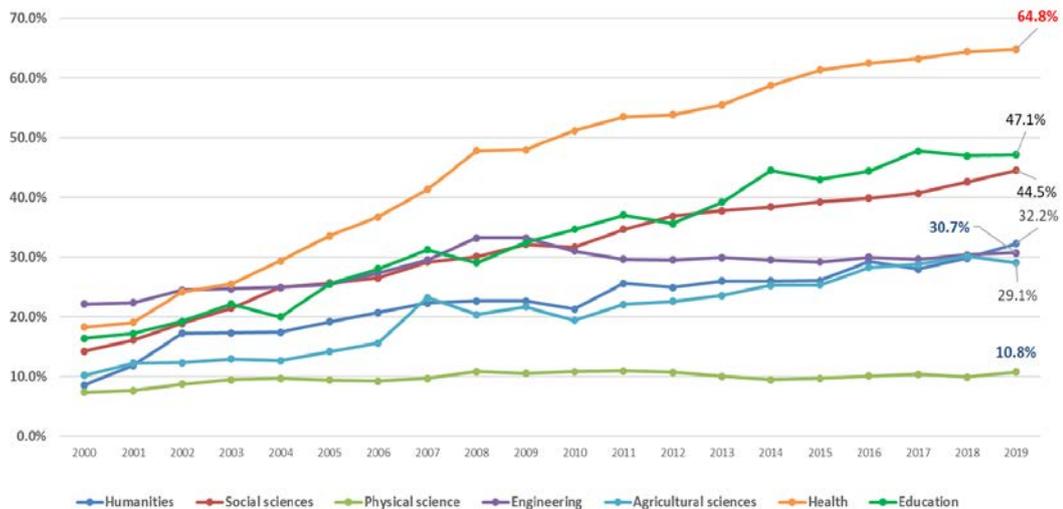
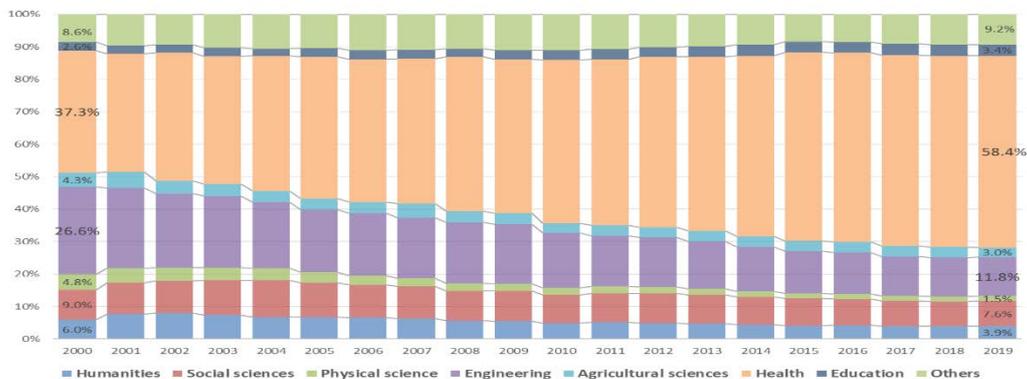


Figure 3-2. Percentage of students who worked before beginning doctoral studies according to discipline (2000–2019)



(Both Figures 3-1 and 3-2 were created based on the School Basic Survey)

3—2 Situation of students who had worked before beginning doctoral studies in the 2018 cohort

When the 2018 cohort was asked about their work experience during doctoral studies, 53.7% indicated that they had worked (Figure 3-3). When asked if they had worked continuously during their doctoral studies, 58.7% responded that they had continuously worked, 6.2% indicated that they had quit working temporarily, and 28.8% answered that they quit their job until finishing their coursework. Therefore, students who aimed to acquire a doctoral degree while working accounted for approximately one-third of the 2018 cohort (Figure 3-4). Of those in the 2018 cohort who had worked before beginning doctoral studies, nearly 70% indicated they were in the health care field (69.3%). Therefore, many students entered a doctoral course while working as a medical intern or in a similar profession (Figure 3-5).

Figure 3-3. Work experience before beginning doctoral studies **Figure 3-4. Work experience during doctoral studies**

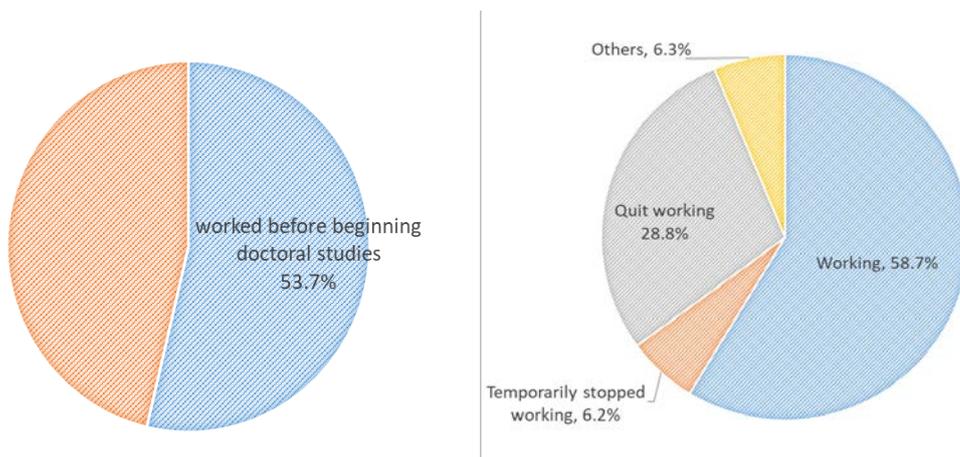
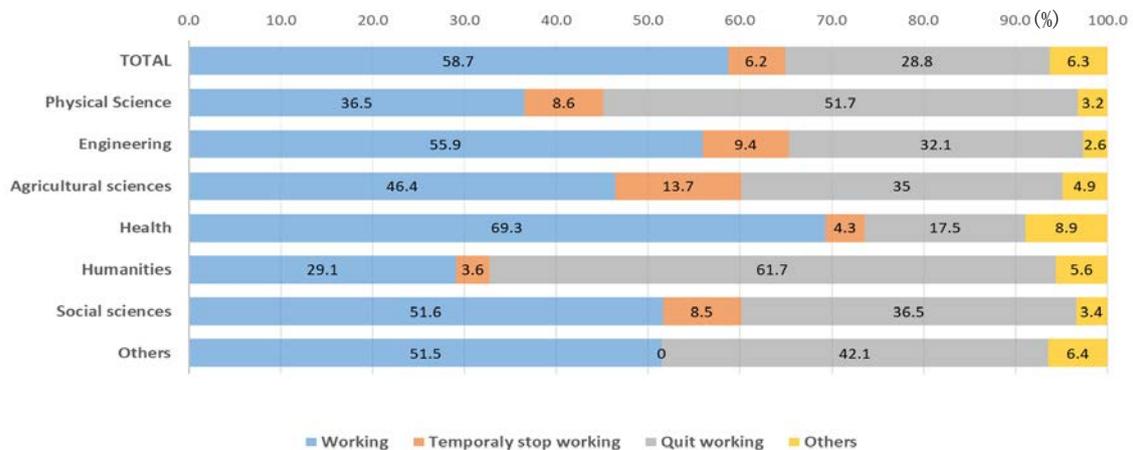


Figure 3-5. Employment status of students during doctoral studies, who worked before beginning doctoral studies (according to discipline)



3—3 Age distribution of the 2018 cohort

Regarding the age distribution of the 2018 cohort, the percentage of those who were in their early 30s was the largest (38.5%), followed by late 30s (24.4%), 40s (14.8%), and 20s (13.7%) (Figure 3-6). The percentage of doctoral students, who were 30–34 years old was the highest (51.7%), which was higher than those in their 20s (38.5%) by more than 10 points. The majority of students who worked before beginning their doctoral studies was 35–39 years old. Of those students, 31.7% continuously worked during their studies, and had while 36.7% quit working temporarily during their studies. Therefore, many people entered a doctoral course in their early careers. According to discipline, the percentage of students in their 20s was high in the fields of physics (30.4%) and engineering (21.0%), and the percentage of students in their 40s was high in the fields of sociology (20.2%) and health care (19.4%) (Figure 3-7).

Figure 3-6. Age distribution according to student category

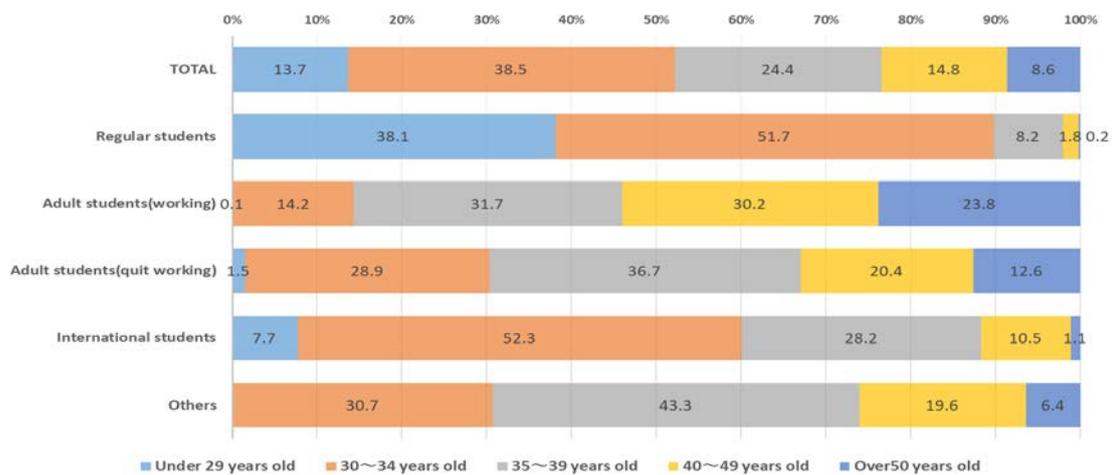
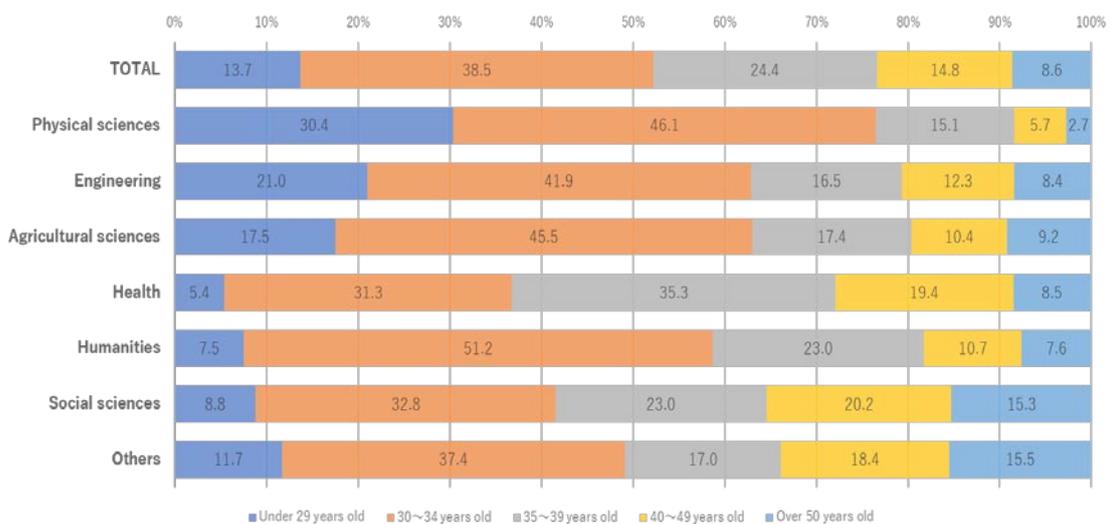


Figure 3-7. Age distribution according to discipline



4. Reasons for entering a doctoral course

When asked their reasons for entering a doctoral course, the percentage of students who indicated “interested in research” was the highest (67.7%), followed by “interested in improving my abilities and skills” (58.0%), and “issues to study and a critical mind” (53.9%), in that order (Figure 4-1). Of students who had worked before beginning and during doctoral studies, the percentage responding that “my employer recommended entering a doctoral course to me or I needed a doctoral degree in my employer” was higher (19.6%) than that of students in other categories. Therefore, most students were motivated to enter a doctoral program by the desire to improve business or to advance in their careers . Many foreign students pointed out economic factors, including career advancement, such as “I could obtain a fellowship” (15.9%) and “I can expect a good job and a good income after obtaining a doctoral degree” (42.6%) (Figure 4-2).

Figure 4-1. Reasons for entering a doctoral course (overall)

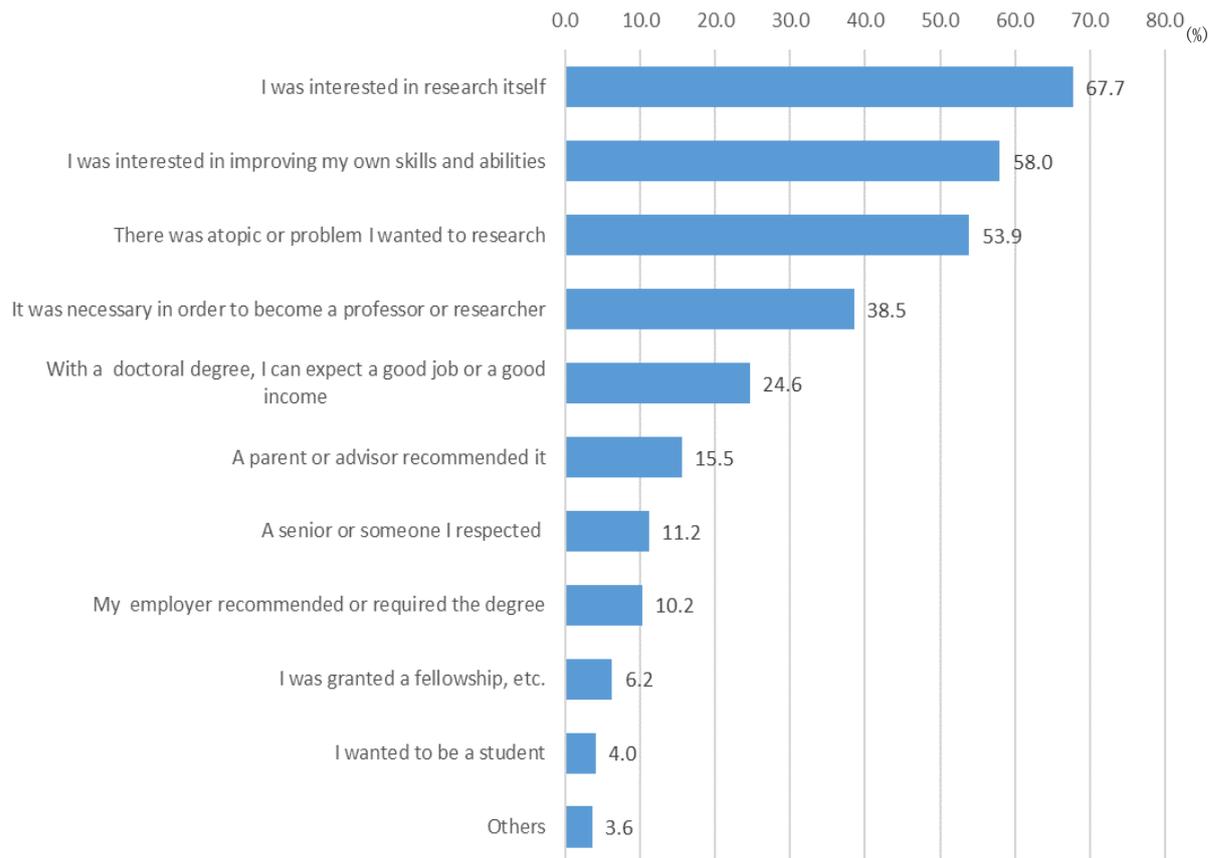
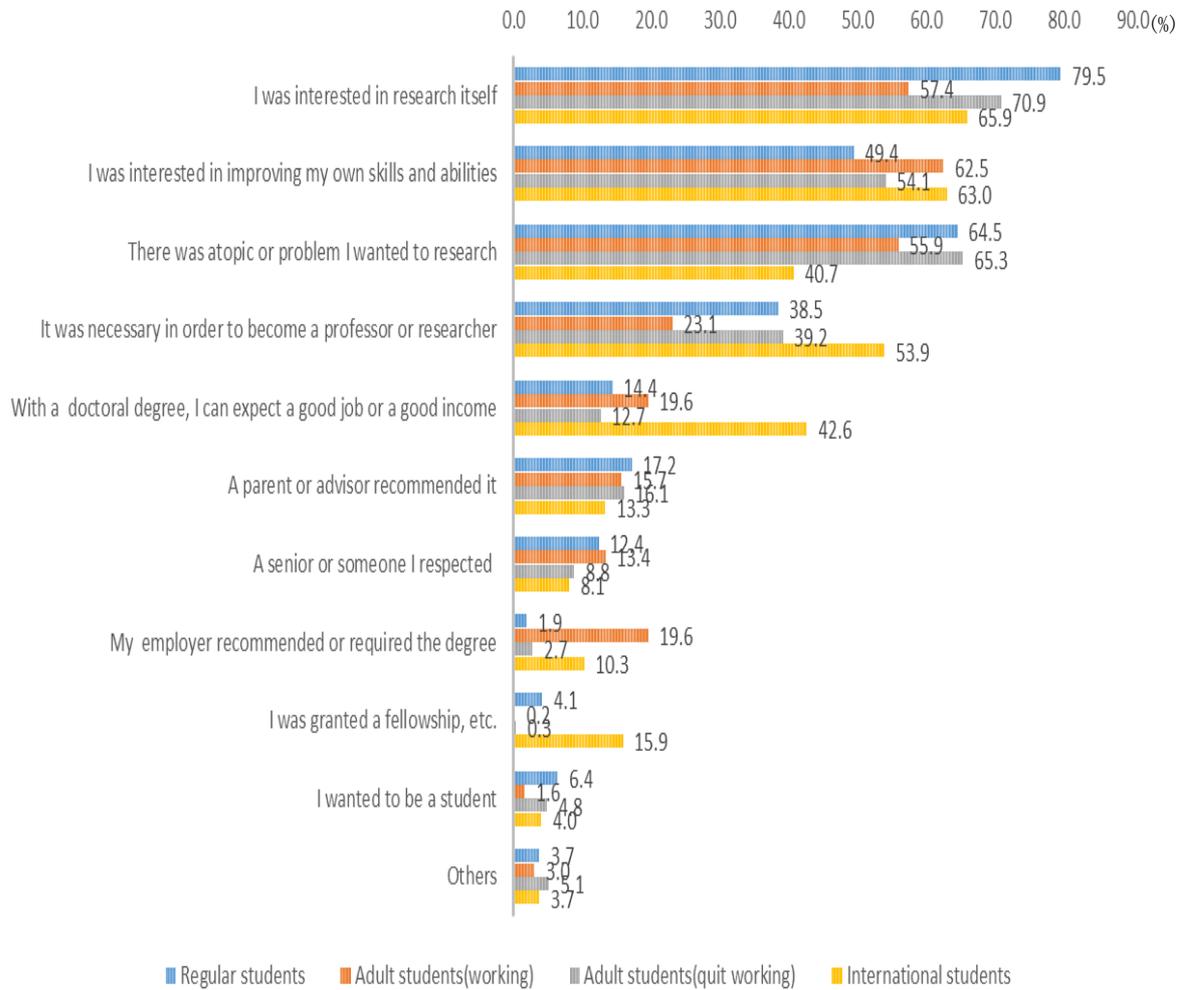


Figure 4-2. Reasons for entering a doctoral course according to student category (multiple answers allowed)



When asked to offer other reasons for entering a doctoral course in open-ended questions, some students answered that “I met a reliable faculty member” or “the teaching faculty member was the leading person in my research field.” Thus, some students demonstrated the effects of teaching faculty members. Some students also answered that “my school expenses might be supported” or “I was elected to receive a scholarship from my university.” Thus, some students considered entering a doctoral course from an economic perspective. In the field of health care, some students answered that “I needed to acquire a license for pharmacist,” “the medical office of my university instructed me to enter a doctoral course,” or “a doctoral degree was required for becoming a certified physician.” Thus, the direct motivations of many students in the field of health care involved the acquisition of qualifications, such as a certified physician, or the instruction from affiliated institutions. Other students who were working answered that “the professor of a joint research destination recommended

entering a doctoral course while working” or “I needed a doctoral degree as a research member of a company, which was the joint research destination.” Thus, joint research with a university or a company led some to enter a doctoral course. Other students who were working also answered that “in my company, there was a system to enter a doctoral course at a foreign or a domestic university, the expenses of which were paid by the company.” Thus, some organizations had a system to support staff members in obtaining a higher education. Many foreign students answered that “I wanted to change my career path” or “in order to seek a better job after.” Thus, many foreign students were motivated by career advancement.

<Education and research>

- I met a reliable faculty member
- The teaching faculty member was the leading person in my research field
- I wanted to publish my paper
- I wanted to receive specialized training

<Qualification acquisition>

- I needed the preparation to pass the national examination to obtain a pharmacy license
- Instruction from the medical office of my university
- I can be a medical specialist simultaneously
- To pass the bar examination

<Business and career>

- A doctoral degree was required by my company’s promoting strategy
- In my company, there was a system to enter a doctoral course at a foreign or a domestic university, the expenses of which were paid by the company
- I needed a doctoral degree as a research member of a company
- In order to seek a better job

<Others>

- To stay abroad, I thought that a doctoral degree was indispensable
- I looked for a job, but I could not find one
- I was not interested in finding a job
- To leave a job because of marriage and giving birth

5. Interuniversity migration before entering a doctoral course

When asked about their alma mater before entering a doctoral course was, 39.2% of students indicated they went to the same university from their bachelor's program to their doctoral program (Figure 5-1). The percentage of students disclosing that they had changed universities when entering a master's program from a bachelor's program was 31.5%, and the percentage of students responding that they had changed universities when entering a doctoral program from a master's program was 37.6%. According to student category, 67.5% of doctors answered that they went to the same university from a bachelor's program to a doctoral program. In addition, only 12.5% of doctoral students changed universities when entering a doctoral program from a master's program. Therefore, students tended to go to the same university from a master's program to a doctoral program (Figure 5-2).

Figure 5-1. Interuniversity migration before entering a doctoral course (overall)

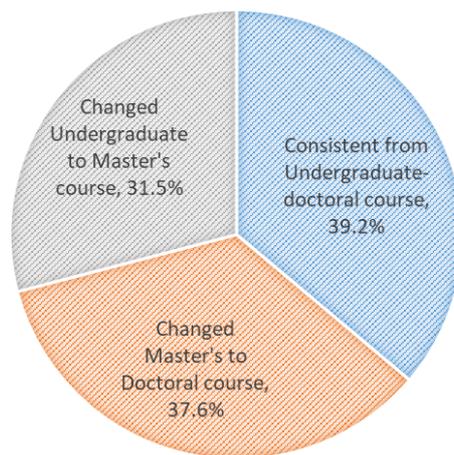
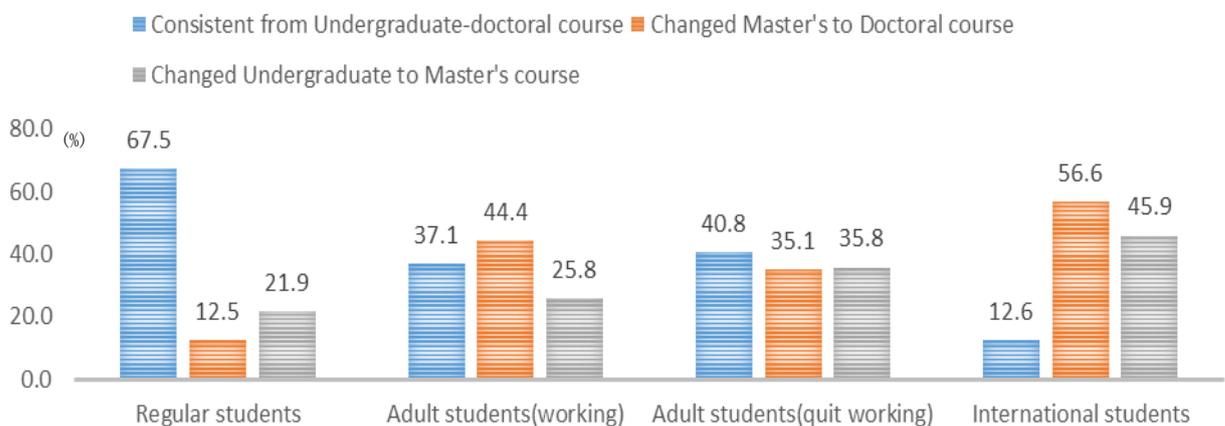


Figure 5-2. Interuniversity migration before entering a doctoral course (according to student category)



6. Financial situation of students during doctoral studies

6-1 Tuition exemption

When asked about tuition exemptions during doctoral studies, 54.1% of students did not receive any tuition exemptions (Figure 6-1). Of those who received a tuition exemption, the majority received only partial exemptions, and only 16.5% received a full exemption. According to student category, the percentage of foreign students who received a complete exemption was the highest (36.9%). When including partial exemptions, 66.9% of foreign students received some type of tuition exemption (Figure 6-2).

Figure 6-1. Tuition exemption during doctoral studies (overall)

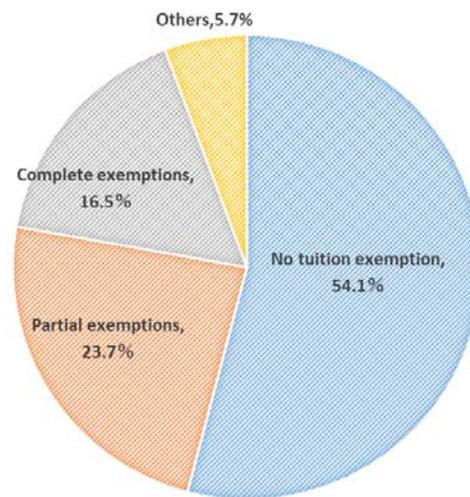


Figure 6-2. Tuition exemption during doctoral studies (according to student category)



According to discipline, more than 50% of the students in fields of STEM, including agriculture and physics, received partial or complete exemptions. This percentage was higher in of the STEM fields than in the humanities or sociology field (Figure 6-3). In the health care field, in which the percentage of students who were working while pursuing a doctoral degree was high, only 7.5% received complete exemptions. When asked about the annual amount of exemption, approximately one-third indicated they received less than 300,000 yen (Figure 6-4). In contrast, more than 30% of foreign students responded that the annual amount of exemption exceeded 600,000 yen. Therefore, both the percentages and amounts were higher for foreign students than for Japanese students.

Figure 6-3. Tuition exemption during doctoral studies (according to discipline)

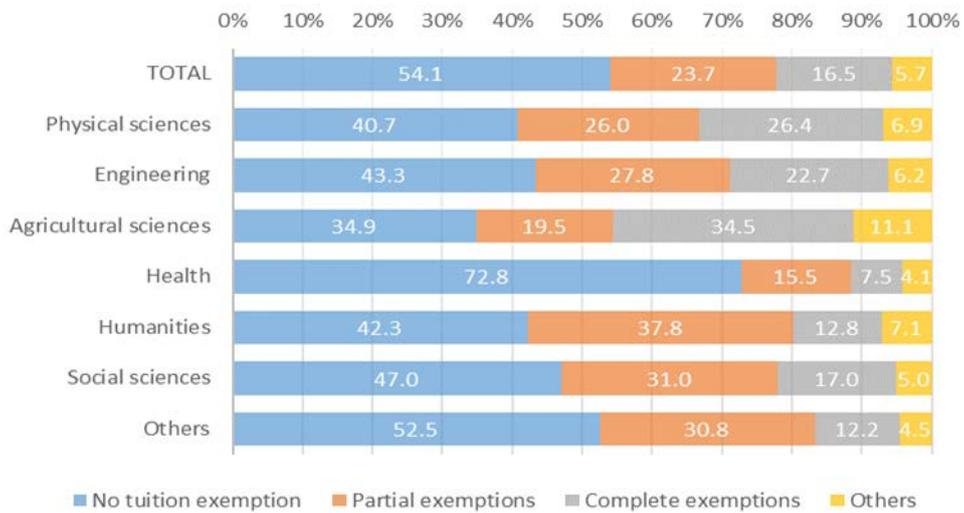
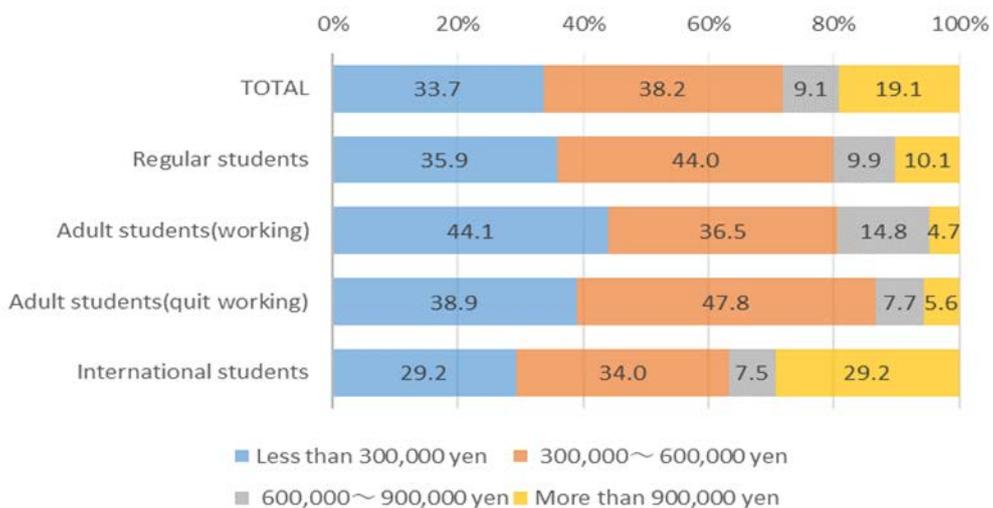


Figure 6-4. Tuition exemption amount during doctoral studies (according to student category)



6-2 Presence of accumulated debt during doctoral studies

When asked about borrowing money while completing doctoral coursework, over 20% of students admitted that the amount of accumulated debt exceeded 2 million yen (Figure 6-5). Moreover, 17.4% of these students indicated that the amount of accumulated debt exceeded 3 million yen. According to student category, more than 50% of doctoral students affirmed the presence of accumulated debt. Moreover, 44.7% of these students indicated they accumulated debt over 2 million yen and 35.2% borrowed more than 3 million (Figure 6-6). It is pointed out that because of unstable financial conditions during doctoral studies, many master's students avoid entering a doctoral course. Due to a fellowship project launched in 2020 or similar projects, such a situation is expected to be improved.

Figure 6-5. Debt accumulation when completing doctoral coursework (overall)

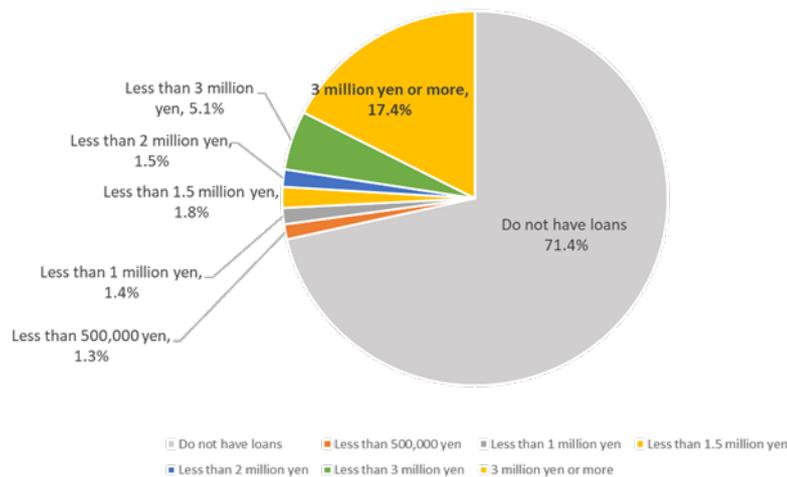


Figure 6-6. Debt accumulation when completing doctoral coursework (according to student category)



6-3 JSPS Research Fellowship for Young Scientists

When asked whether they had been employed by the JSPS Research Fellowship for Young Scientists during doctoral studies, 4.7% of the students answered that they were employed as DC1 and 7.9% answered that they were employed as DC2 (Figure 6-7). The percentage of male students was higher in both DC1 and DC2. More than 80% of the students were under 34 years old (Figure 6-8). The JSPS age limit was abolished in 2014; however, the percentage of students over the age of 30 and employed by the JSPS Research Fellowship for Young Scientists was remarkably low.

Figure 6-7. Employment by the JSPS Research Fellowship for Young Scientists

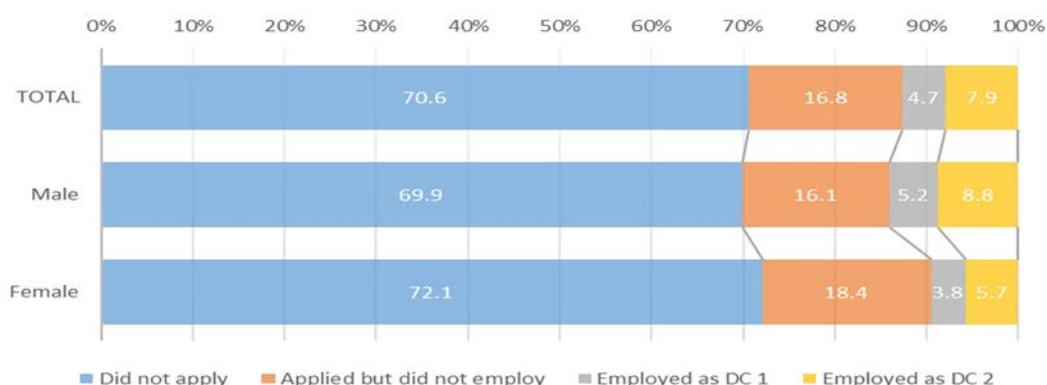
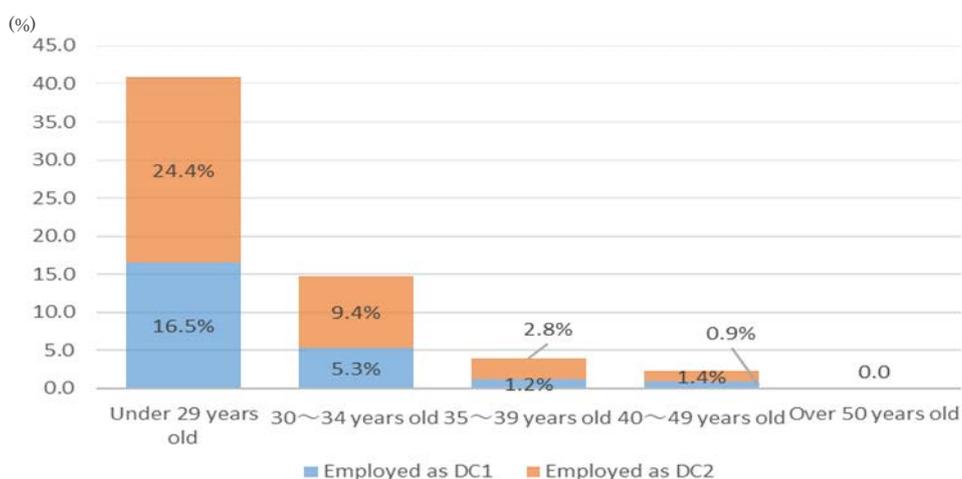


Figure 6-8. Employment by the JSPS Research Fellowship for Young Scientists (according to age)



According to student category, 31.6% of doctoral students, 14.4% of students who worked before beginning and quit working during doctoral studies, and 6.4% of foreign students were employed by the JSPS Research Fellowship for Young Scientists, including DC1 and DC2 (Figure 6-9). In the past, the JSPS restricted compensation, overseas travel, and participation in internships due to the obligation

of students to concentrate on research. In 2018, these restrictions were partially relaxed; however, for doctoral students, who have other responsibilities and commitments, many restrictions still exist in the JSPS Research Fellowship for Young Scientists. In the future, this system should be more flexibly operated in response to the changes in doctoral students and their needs.

Figure 6-9. Employment by the JSPS Research Fellowship for Young Scientists (according to student category)

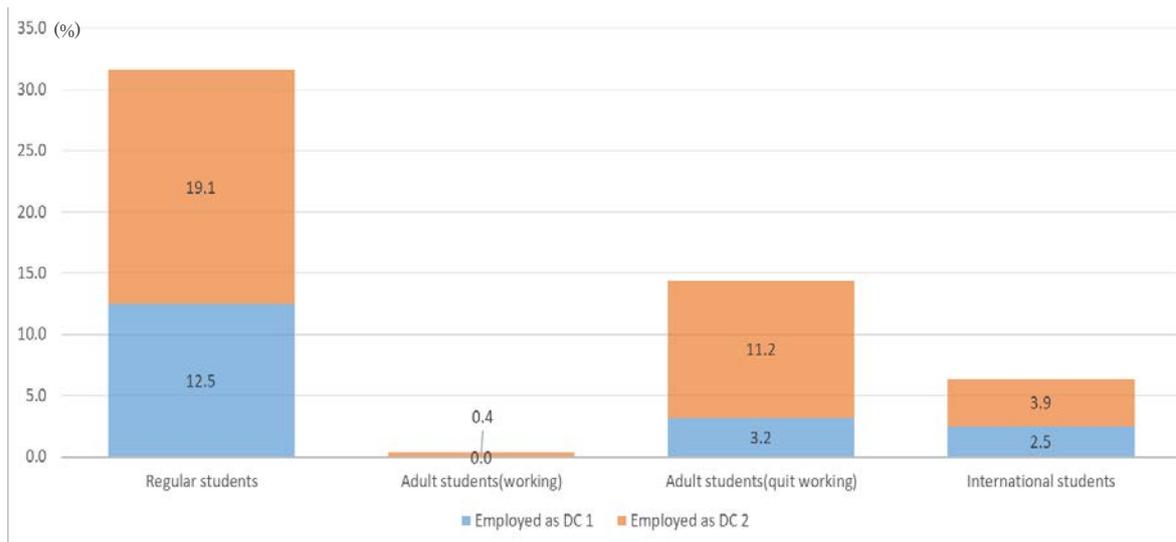
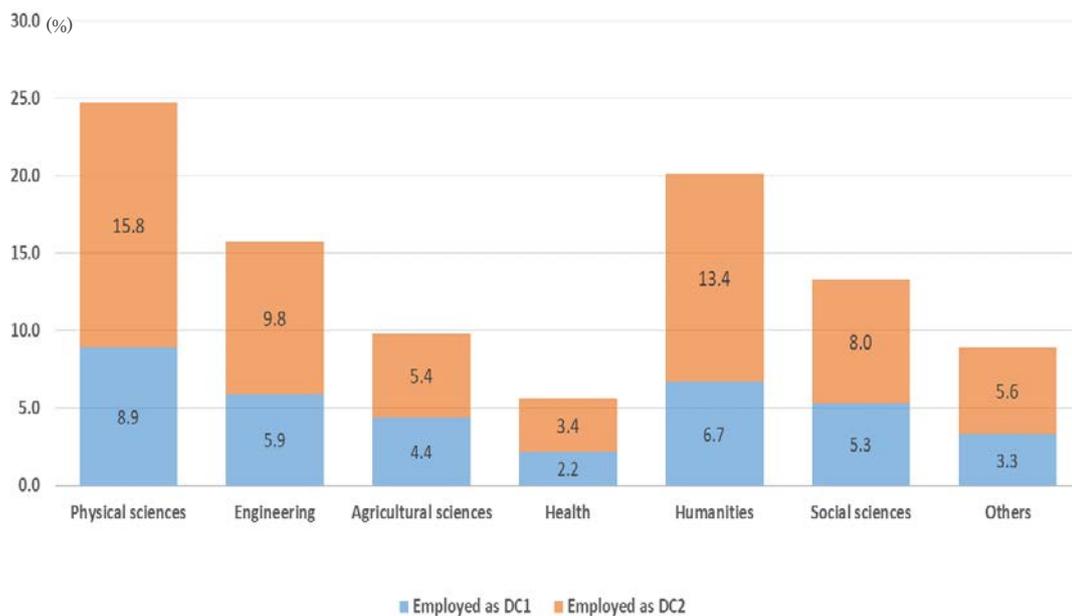


Figure 6-10. Employment by the JSPS Research Fellowship for Young Scientists (according to discipline)



6-4 Average research time per weekday during doctoral studies

When asked about their average research time per weekday, the percentage of students indicating more than 8 h and less than 12 h was the highest (29%), followed by more than 5 h and less than 8 h (22.2%) (Figure 6-11). Of the students who had worked before beginning doctoral studies the percentage indicating more than 1 h and less than 3 h was the highest (37.3%), and the percentage who chose less than 1 h was approximately 10% (10.8%). According to discipline, the percentage of students indicating more than 15 h was approximately 10% in the fields of agriculture (10.7%) and engineering (9.6%). In the fields of STEM, including agriculture and physics, the average research time per weekday during doctoral studies tended to be prolonged (Figure 6-12).

Figure 6-11. Average research time per weekday during doctoral studies (according to student category)

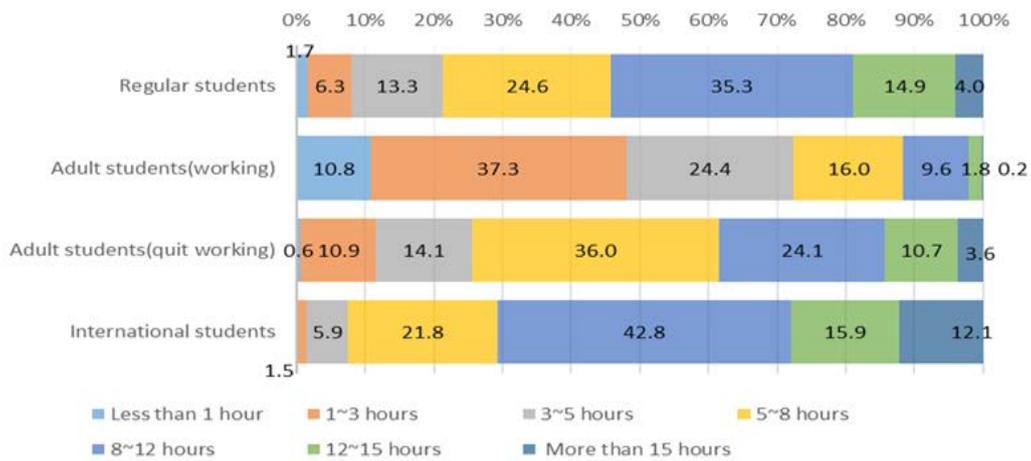
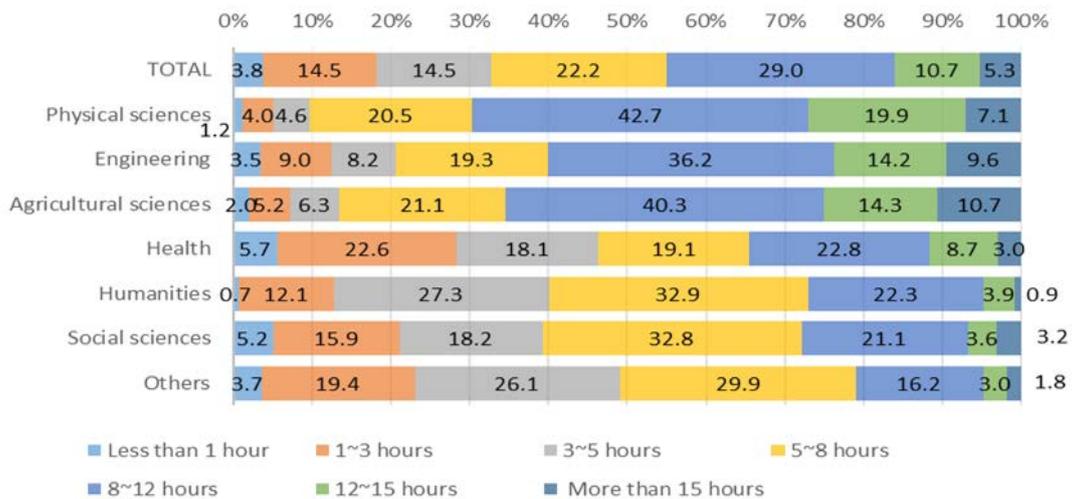


Figure 6-12. Average research time per weekday during doctoral studies (according to discipline)



6-5 Internship

When asked about internship experience during doctoral studies, 13% of the students selected “yes” (Figure 6-14). This percentage has not greatly changed since the first survey in 2012 (Figure 6-13). Therefore, the use of internship programs, in a doctoral course has not advanced. At present, the Ministry of Education, Culture, Sports, Science and Technology is exploring an on-the-job research internship program because “the promotion of a long-term paid internship by collaboration with companies” and “the promotion of offering doctoral students credit for a long-term paid internship and of making a long-term paid internship an optional or compulsory subject” were evaluated as main policies in the Comprehensive Package to Strengthen Research Capability and Support Young Researchers (the Council for Science, Technology, and Innovation in January 2020). In the future, because of these policies, the number of students participating in internship programs is expected to increase, and the career path of students is expected to expand with internship experience as a turning point.

Figure 6-13. Internship experience (2012)

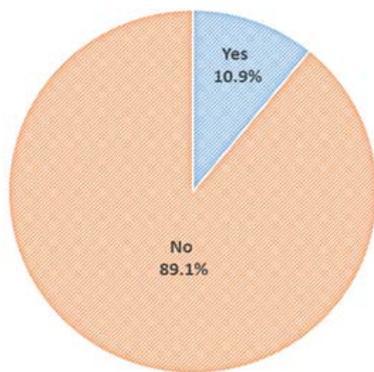


Figure 6-14. Internship experience (2018)

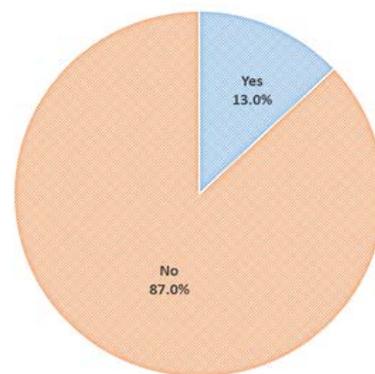
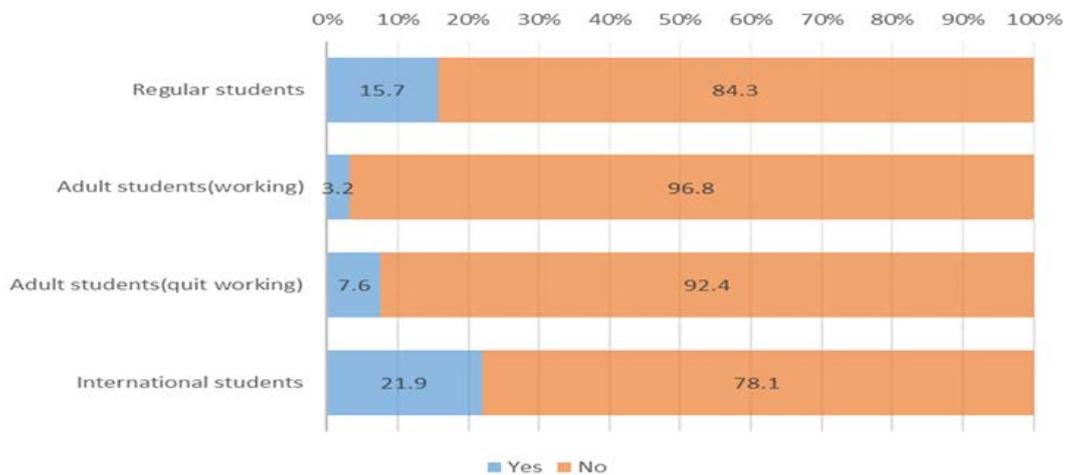
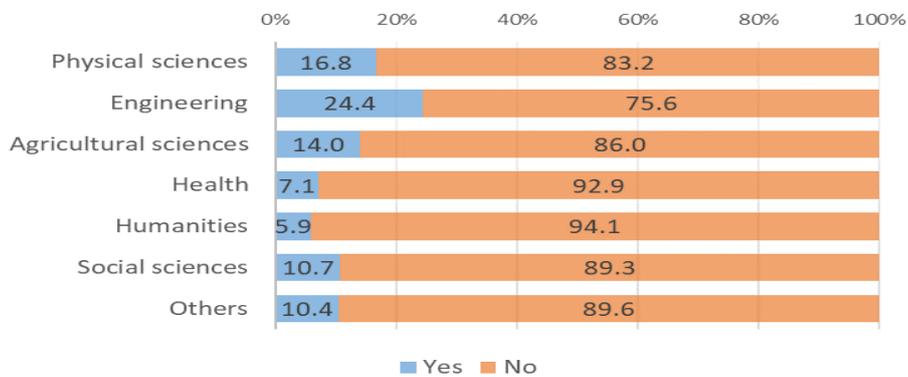


Figure 6-15. Internship experience (according to student category in the 2018 cohort)



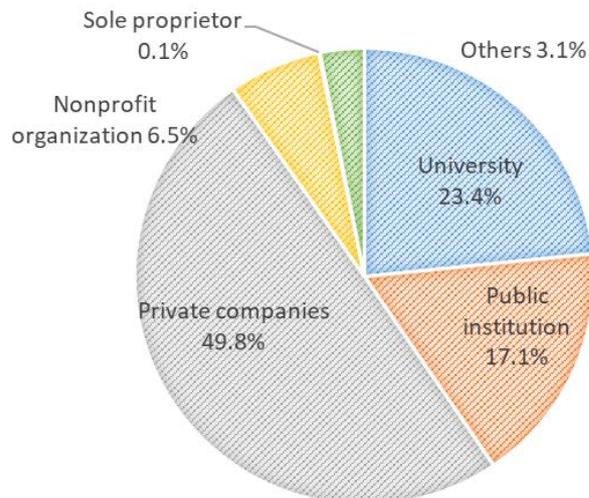
When analyzing the internship experience of the 2018 cohort according to student category, the percentage of foreign students was the highest (21.9%) so they participated in internship programs the most (Figure 6-15). The percentage of students who had worked before beginning but not worked during doctoral studies and participated in an internship was 7.6%, which was approximately half that of doctoral students. According to discipline, the percentage of students was the highest in the field of engineering (24.4%), followed by physics (16.8%), and agriculture (14.0%). The percentage of students in the fields of human sciences was 5.9%, which was less than half that in the fields of science and technology, so the number of students participating in internship programs differed greatly according to discipline (Figure 6-16).

Figure 6-16. 2018 cohort internship experience (according to discipline)



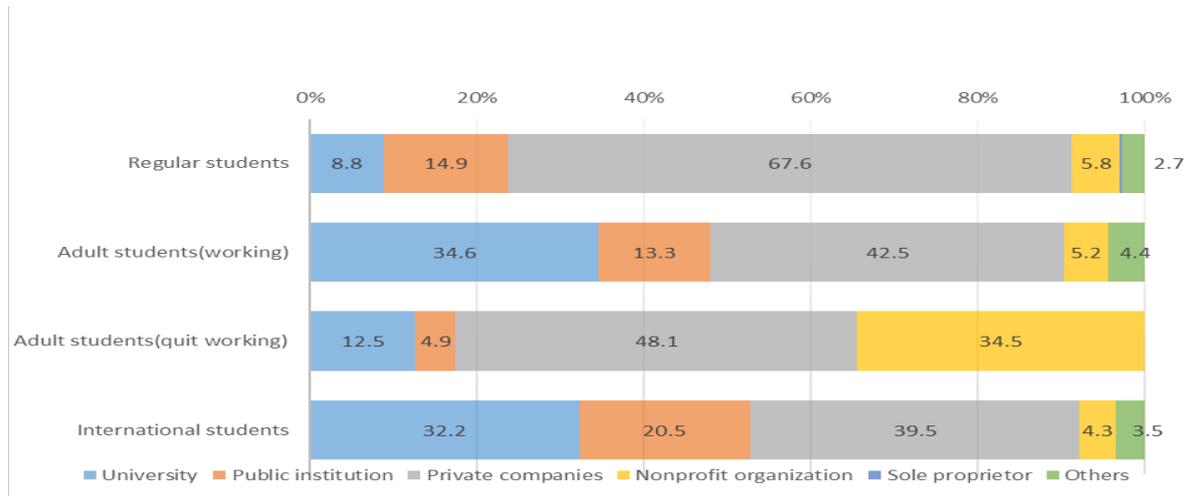
When students who participated in internships were asked where the internship occurred, the percentage of internships at private companies was the highest (49.8%), followed by universities or the like (23.4%), and public research institutes (17.1%) (Figure 6-17).

Figure 6-17. Internship hosts (overall)



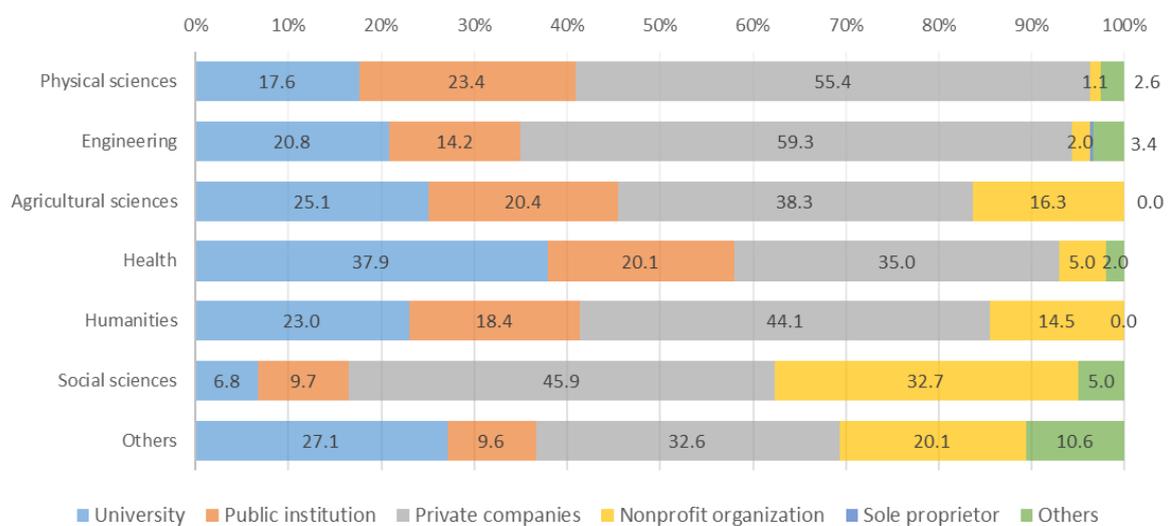
Although 67.6% of doctoral students served an internship in private companies, 42.5% and 39.5% of students who had worked before beginning doctoral studies and foreign students served an internship in private companies, respectively. Therefore, many students who had worked before beginning doctoral studies and foreign students completed an internship at universities or the like or public research institutes (Figure 6-18).

Figure 6-18. Internship hosts (according to student category)



When analyzed by discipline, the percentage of students who completed internships in private companies was the highest in the field of engineering (59.3%), followed by physics (55.4%), and society (45.9%) (Figure 6-19). In the field of sociology, the percentage who indicated non-profit organizations as internship hosts was the highest (32.7%), and that of students who answered universities or the like was the lowest.

Figure 6-19. Internship hosts (according to discipline)



When asked to identify the reasons for participating in an internship, the percentage of students responding “I was interested in an internship host as my future job and occupation” was the highest (57.7%), followed by “my supervisor, seniors, and parents recommended an internship to me” (34.5%), and “I thought that serving an internship in a company was advantageous for getting a job in the company” (30.7%), in that order (Figure 6-20). Responses to open-ended questions included, “I needed to complete an internship,” “to acquire a credit,” and “an internship was an essential subject in my leading graduate school.” Thus, an internship was incorporated into doctoral programs. Moreover, “to collect information in other fields,” “to understand the actual situation of policy development process and system management from the inside of administration,” and “an internship was my research target” were also given. Thus, an internship was understood as a means to increasing knowledge. The percentage of students answering that the duration of an internship was between one week and one month was the highest (25.0%) (Figure 6-21).

Figure 6-20. Reasons for participating in an internship (overall)

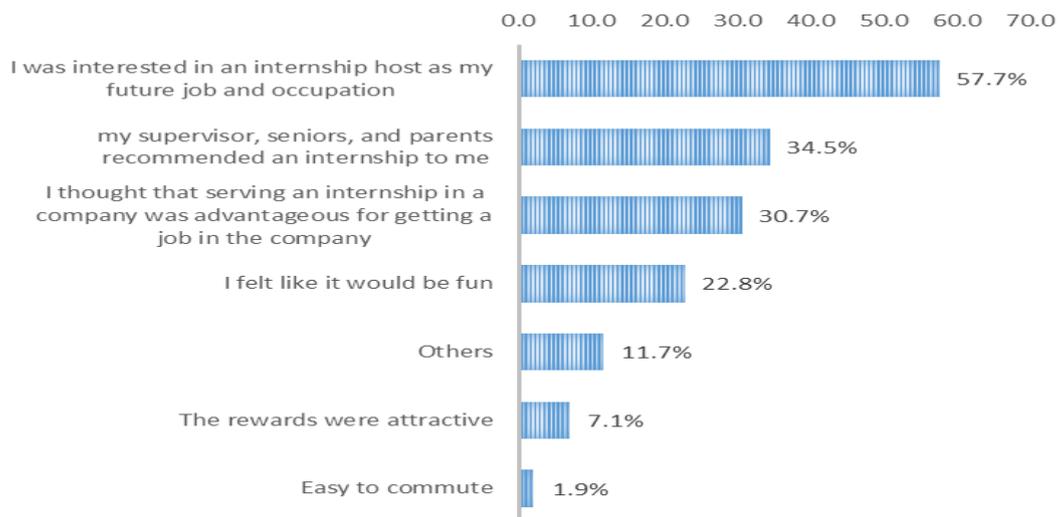
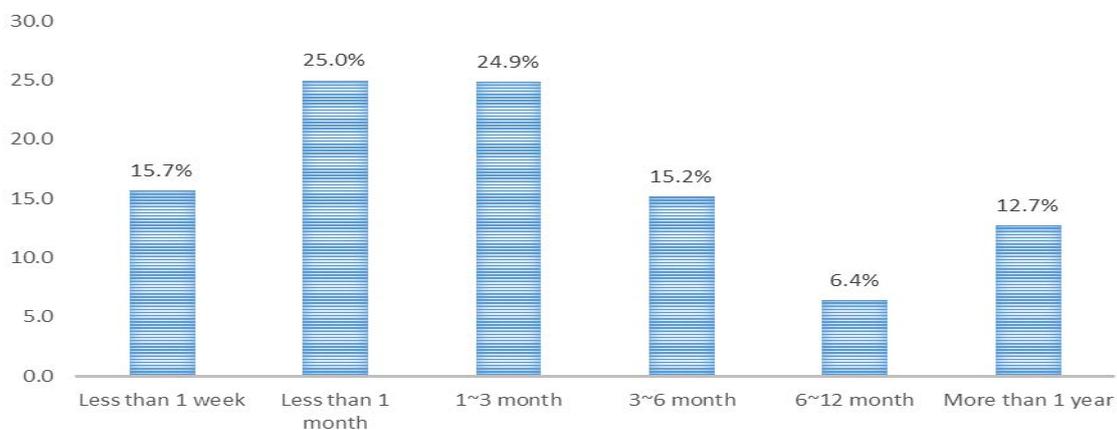


Figure 6-21. Internship duration (overall)



When asked about being employed by the internship hosts, 79% of students who participated in an internship indicated that they were not employed by the internship host (Figure 6-22). When asked why they did not become employed by the host organization, the percentage of students answering that “originally, I did not want to be employed by the internship host” was the highest (49.1%). The percentage of students responding that “I got a job in a company, the business type of which was the same as that of the internship host” was 13.7%. Among the responses to open-ended questions were “there was no empty position in the internship host organization,” “no job was available in the internship host,” and “the internship host did not recruit a new doctoral graduate.” Therefore, there were differences in employment conditions between students and internship hosts (Figure 6-23).

Figure 6-22. Employment by internship hosts (overall)

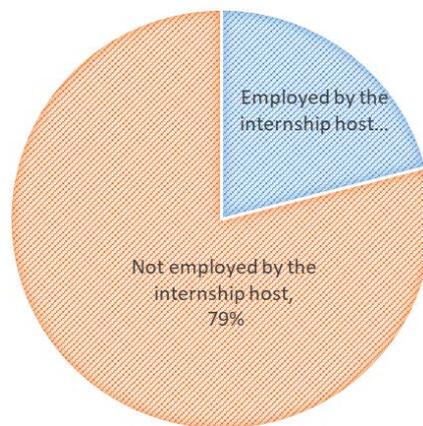
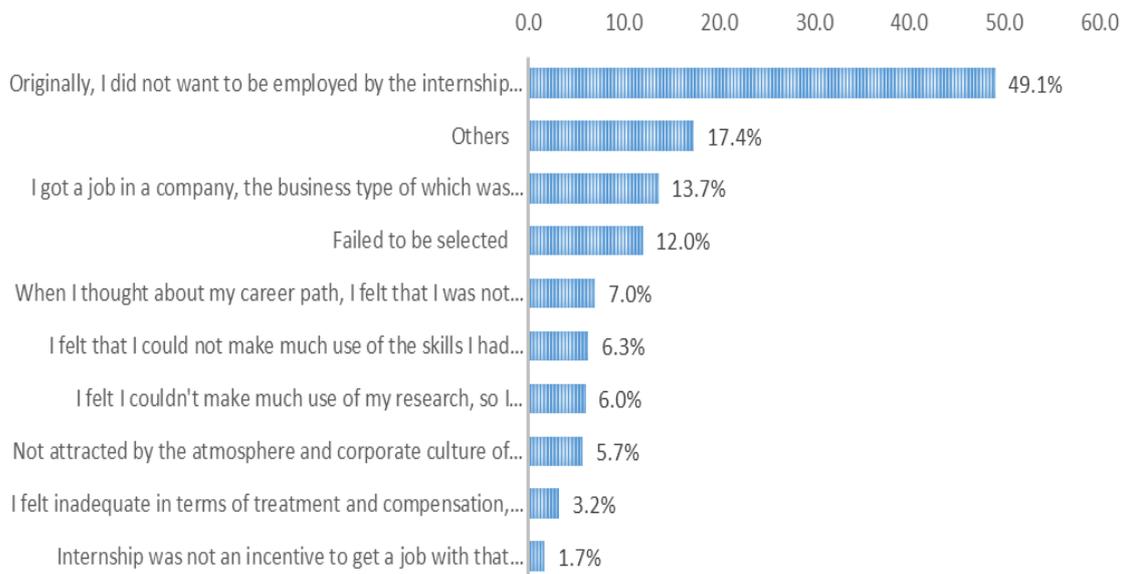


Figure 6-23. Reasons for not being employed by internship hosts (overall)



6-6 Overseas experience during doctoral studies

When asked about studying overseas for more than three months during doctoral studies, 10.0% of students responded they had studied abroad for more than three months (Figure 6-24). No large difference was observed in overseas experience between male and female students (male students: 10.1%, female students: 9.6%). According to age, the percentage of students aged 29 years or younger was the highest (18.2%), and this percentage tended to decrease in older students (Figure 6-25). According to discipline, the percentage of students in the field of engineering was the highest (15.9%), followed by the humanities (14.5%), and physics (13.3%) (Figure 6-26).

Figure 6-24. Overseas experience during doctoral studies

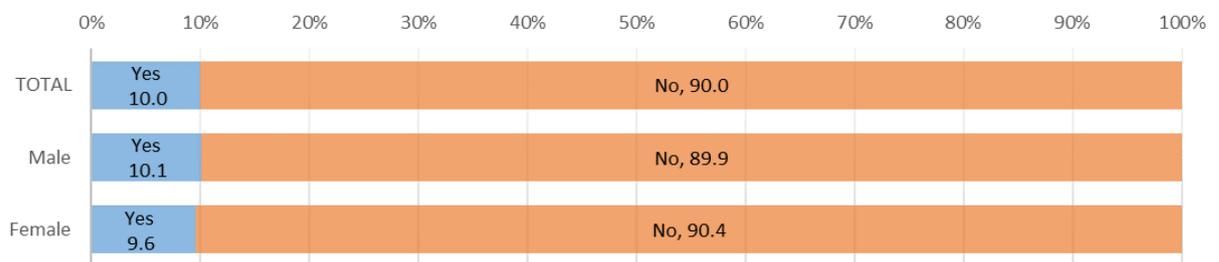


Figure 6-25. Overseas experience during doctoral studies (according to age)

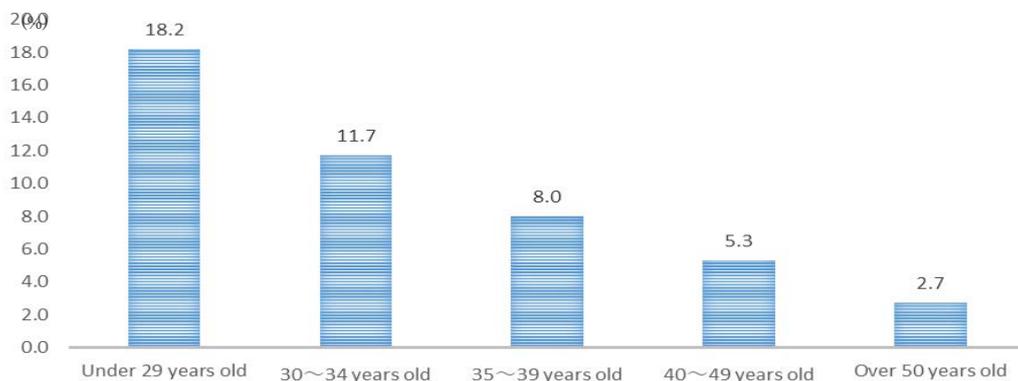
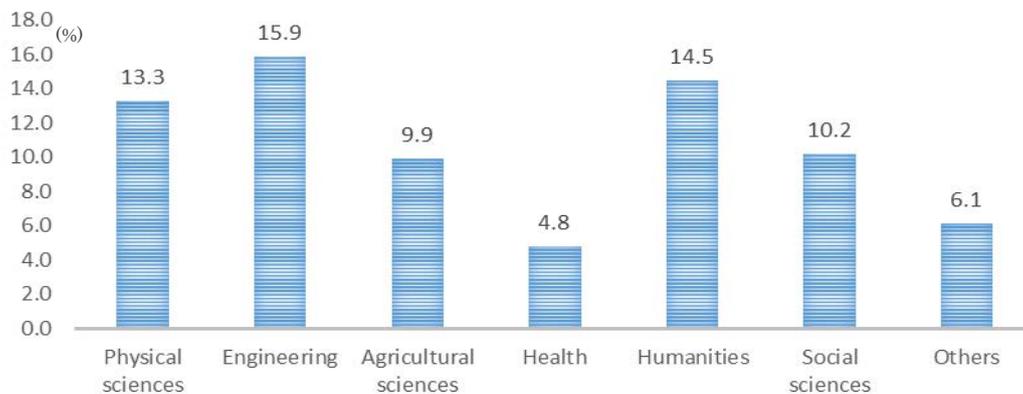


Figure 6-26. Overseas experience during doctoral studies (according to discipline)



6-7 Participation in the Program for Leading Graduate Schools

When asked about participation in the Program for Leading Graduate Schools during doctoral studies, 6.5% of students indicated that they were supported by the program (Figure 6-27). According to student category, the percentage of foreign students who participated in the program was the highest (10.2%), followed by doctoral students (9.4%), and students who had worked before beginning and not worked during doctoral studies (4.9%) (Figure 6-28). According to discipline, the percentage of students who had participated in the program was the highest in the field of engineering (11.8%), followed by physics (10.7%), and agriculture (10.0%) (Figure 6-29).

Figure 6-27. Program for Leading Graduate Schools



Figure 6-28. Participation in the Program for Leading Graduate Schools (according to student category)

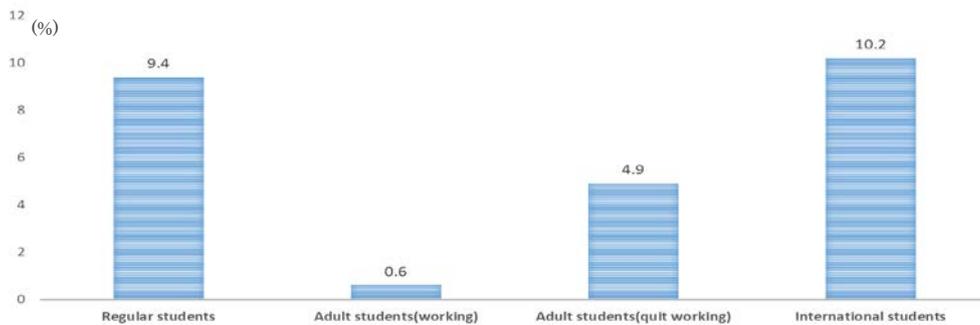
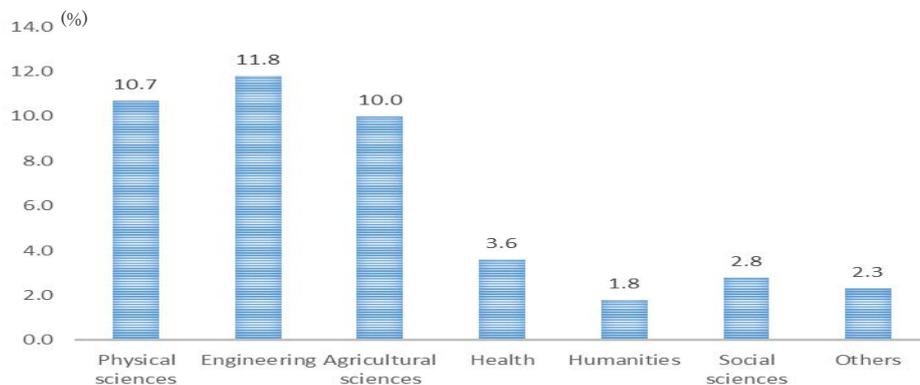


Figure 6-29. Participation in the Program for Leading Graduate Schools (according to discipline)



6—8 Participation in the Doctoral Program for World-leading Innovative and Smart Education

Similarly, when asked about participation in the Doctoral Program for World-leading Innovative and Smart Education, only 1.2% of students answered that they were supported by the program (Figure 6-30). According to student category, the percentage of doctoral students was the highest (1.7%) (Figure 6-24). According to discipline, the percentage was the highest in the field of sociology (1.8%), and this ratio was also high in the fields of engineering (1.8%) and the humanities (1.8%) (Figure 6-31).

Figure 6-30. Support by the Doctoral Program for World-leading Innovative and Smart Education (overall)

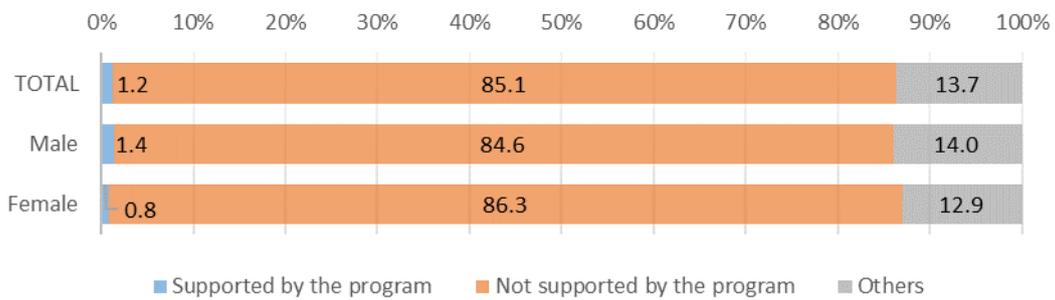


Figure 6-31. Support by the Doctoral Program for World-leading Innovative and Smart Education (according to student category)

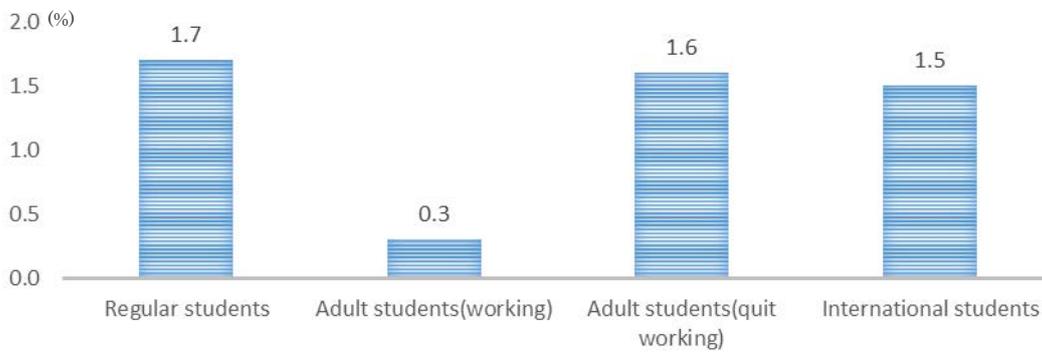
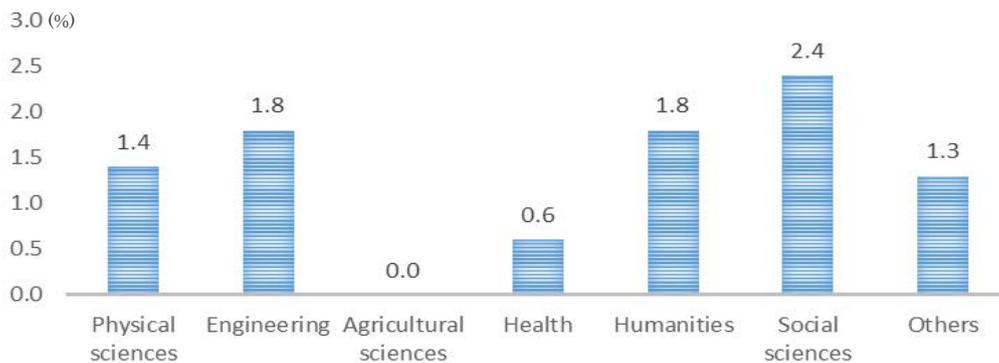


Figure 6-32. Participation in the Doctoral Program for World-leading Innovative and Smart Education (according to discipline)



7. Satisfaction level with doctoral programs

To investigate the 2018 cohort’s satisfaction level with their doctoral programs, we included five items regarding: “the quality of education and research instruction,” “the expansion of human networks and exchange and collaboration with different fields,” “career development support and counseling,” “improvement in internationality,” and “the level of overall satisfaction with doctoral programs.” Including the responses of “good” and “acceptable,” the satisfaction level exceeded 70% for “the quality of education and research instruction” (72.1%) and “the level of overall satisfaction with doctoral programs” (71%) (Figure 7-1). In contrast, the satisfaction level with “career development support and counseling” was only 36.5%. Therefore, many students felt that they were not effectively supported by doctoral programs in finding employment and achieving career development. According to student category, the satisfaction levels of foreign students were high for all five items (Figure 7-2).

Figure 7-1. Satisfaction level with doctoral programs (overall)

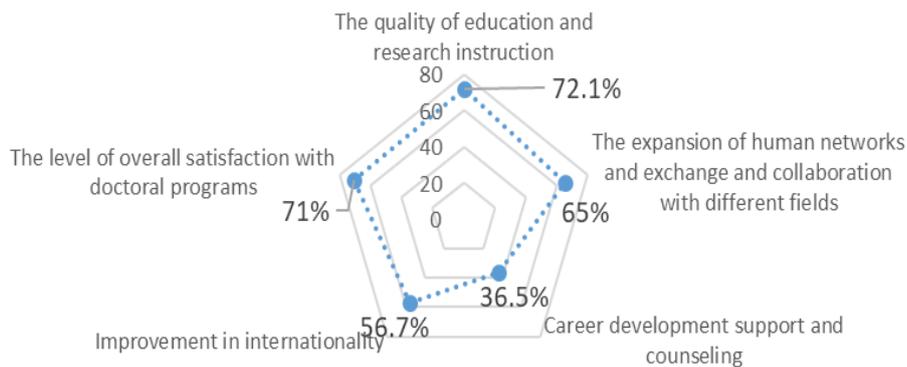
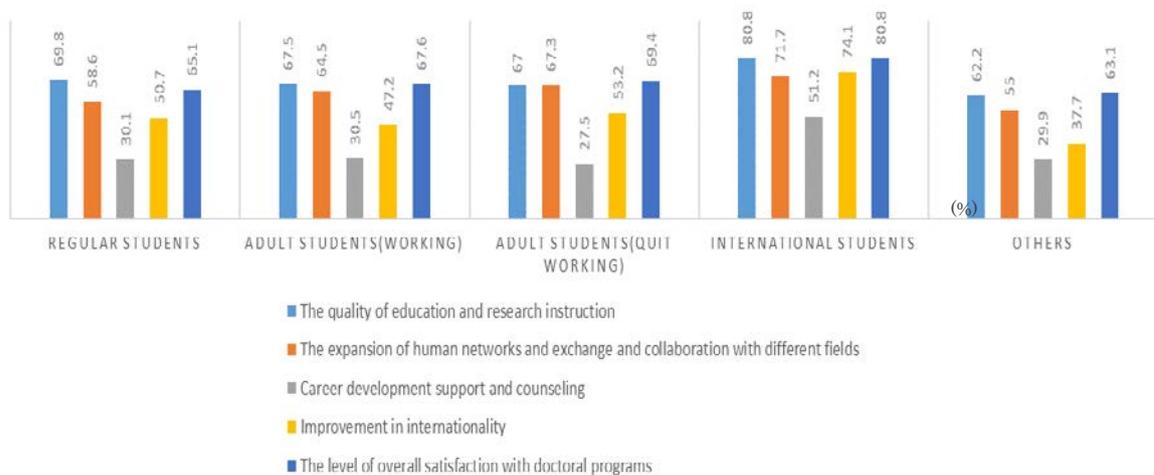


Figure 7-2. Satisfaction level with doctoral programs (according to student category)



8. Type of doctoral degree obtained

The percentage of those who had obtained a doctoral degree in the 2018 cohort 1.5 years after completing their coursework was 60.5% for doctors and 14.8% for doctors by dissertation. Thus, approximately three-fourths of the 2018 cohort obtained a doctoral degree within 1.5 years after completing their doctoral coursework (Figure 8-1). According to student category, there was no great difference in the ratio between doctoral students and students who had worked before beginning doctoral studies. However, the percentage of doctors by dissertation was higher in foreign students (40.0%) than in other student categories by approximately 10 times. The percentage of those who obtained a doctoral degree was higher for foreign students (85.1%) than for students in other categories by approximately 10%. According to discipline, the percentage of those who obtained a doctoral degree was the highest in the field of engineering (85.6%). In the field of health care, the percentage of doctors was the highest (72.0%). In the humanities, when the percentage of doctors was added to that of doctors by dissertation, the total percentage was only 43.8%, which was lower than that in the fields of science and technology (Figure 8-2).

Figure 8-1. Type of doctoral degree obtained (according to student category)

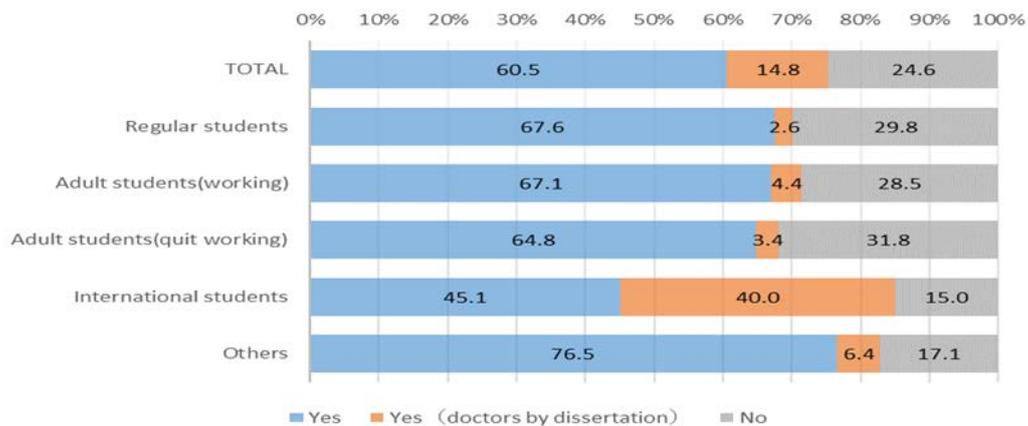
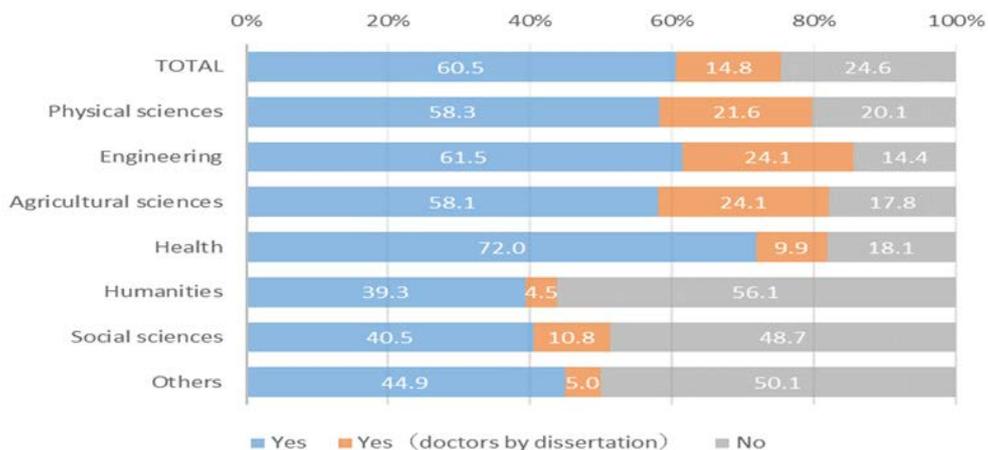


Figure 8-2. Type of doctoral degree obtained (according to discipline)



9. Employment situation

9-1 Current work situation

When we asked the 2018 cohort about their employment situations 1.5 years after completing doctoral coursework, 87.7% answered that they were working (Figure 9-1). According to gender, 91.0% of men and 80.1% of women indicated that they were working (Figure 9-2). The percentage of people responding that “I am working while performing family affairs” was higher in women (5.2%) than in men (0.5%). The percentage of those answering that “I am seeking a job” was also higher in women (3.7%) than in men (2.8%).

Figure 9-1. Current work situation (overall)

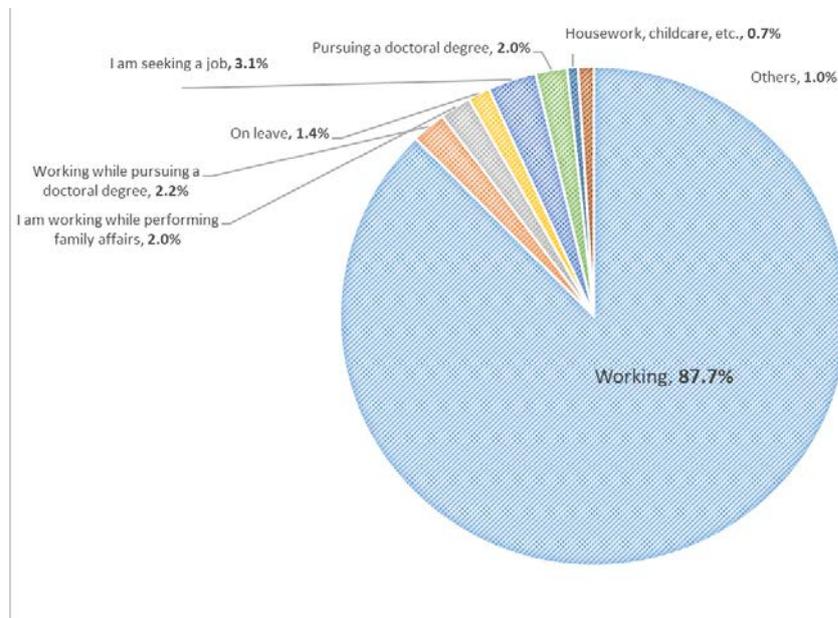
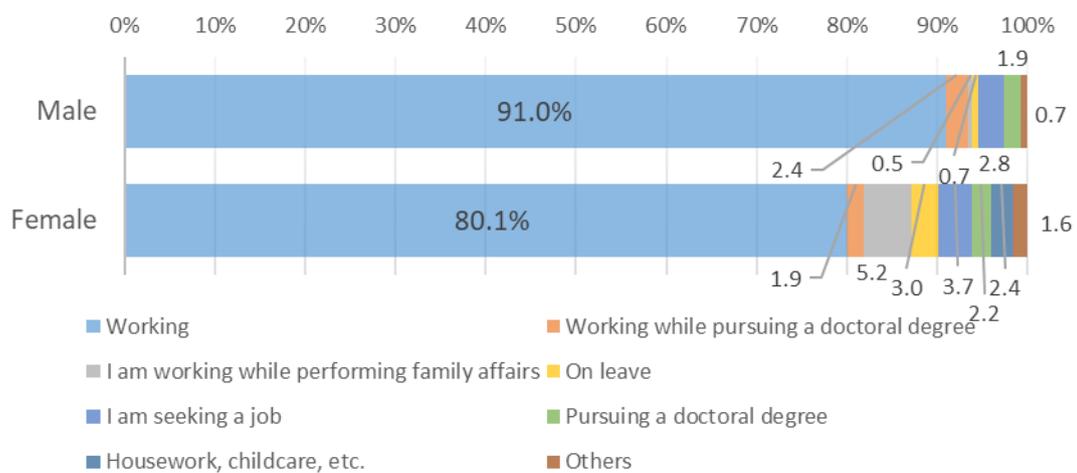


Figure 9-2. Current work situation (according to gender)



According to student category, the percentage of those who were currently working was the highest for students who had worked before beginning and during doctoral studies (94.0%), doctoral students (92.0%), students who had worked before beginning and quit working temporarily during doctoral studies (83.8%), and foreign students (78%) (Figure 9-3). According to discipline, the percentage of those who were currently working was the highest for students in the field of health care (91.4%) and the lowest for students in the humanities (75.8%). In the humanities, the percentage of students who were working while pursuing a doctoral degree was high (5.5%) and that of students who were seeking a job was also high (5.4%). Compared with students in other fields, students in the humanities found it more difficult to acquire a doctoral degree and find a job (Figure 9-4).

Figure 9-3. Current work situation (according to student category)

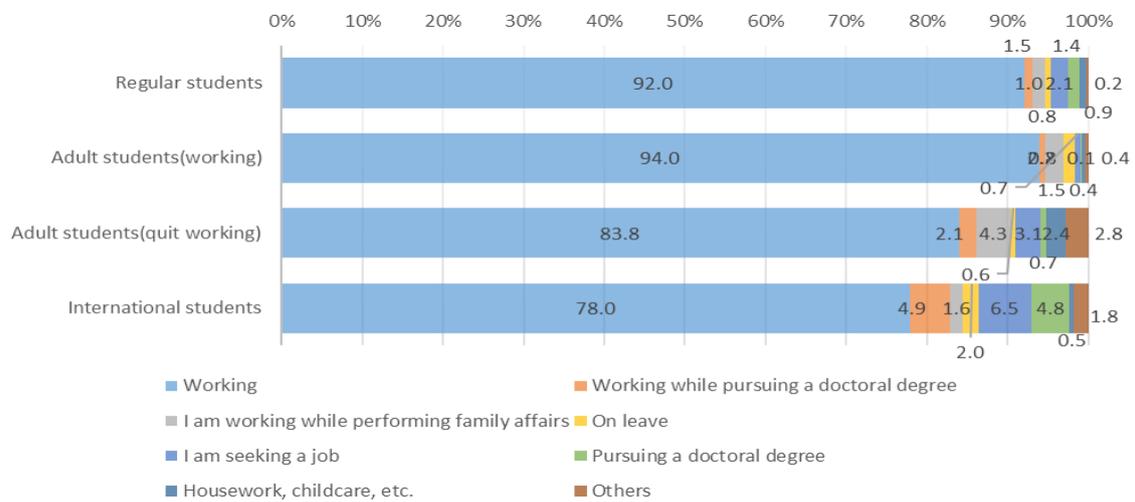
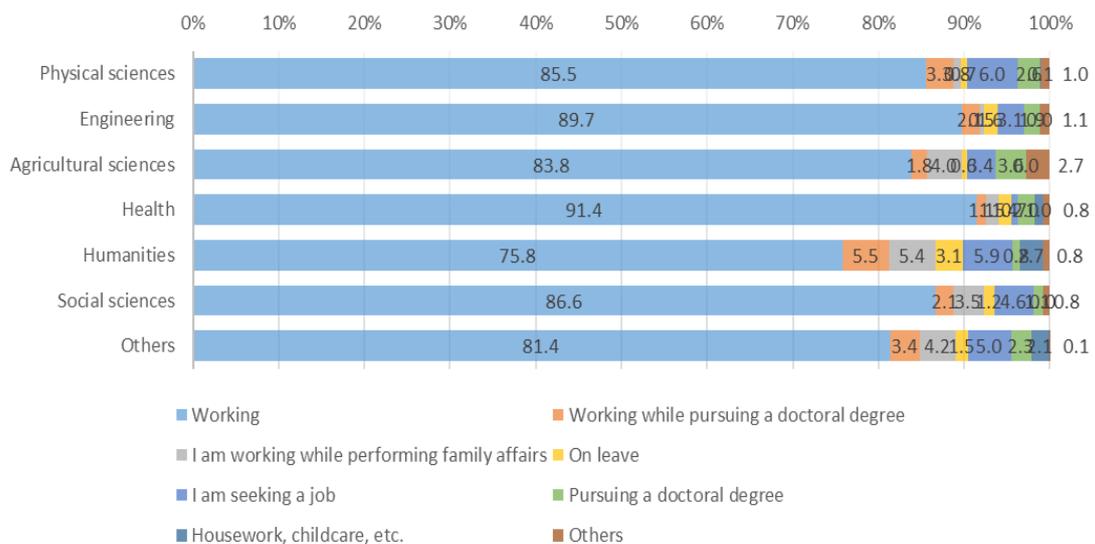


Figure 9-4. Current work situation (according to discipline)



9-2 Current employers

The percentage of those who identified universities or the like as their employers after completing doctoral coursework was the highest, followed by private companies, public institutions, and non-profit organizations, in that order (Figure 9-5). According to gender, the percentage of women who remained in academia was higher than that of men (men: 48.7%, women: 58.7%), and percentage of men who had found a job in private companies was higher than that of women (men: 30.4%, women: 19.5%) (Figure 9-6).

Figure 9-5. Employers after completing doctoral coursework (overall)

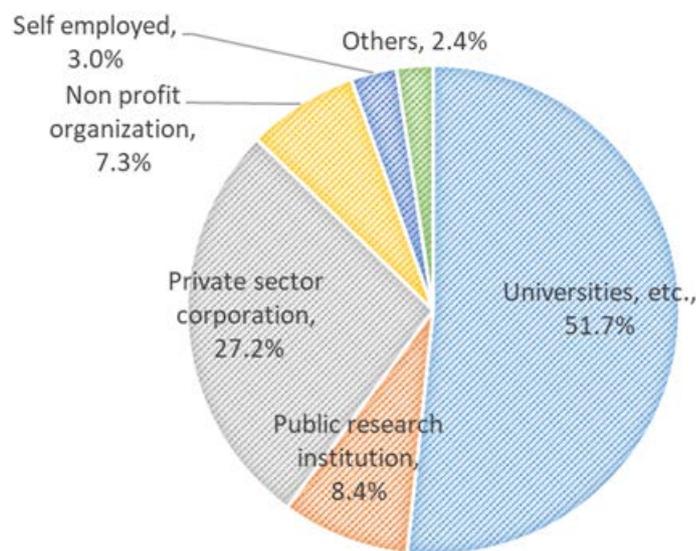
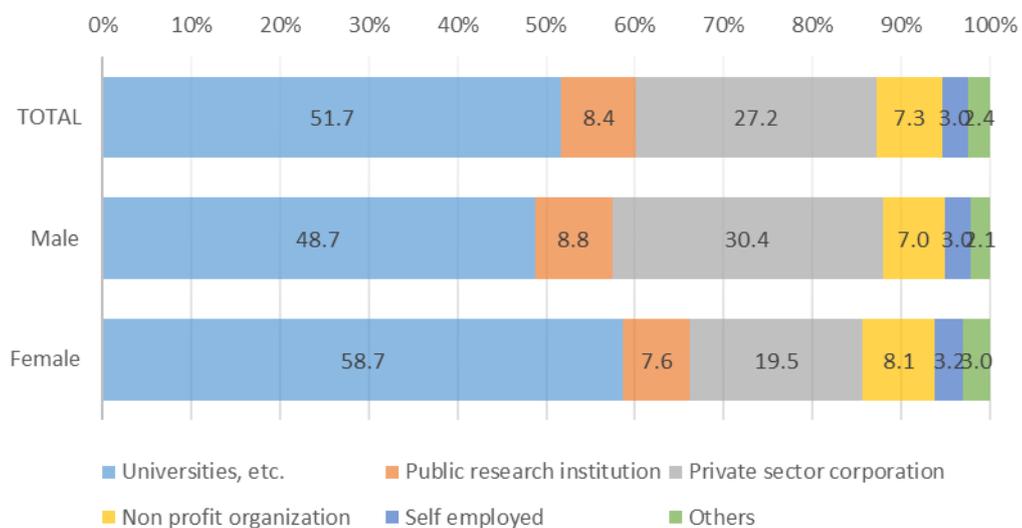


Figure 9-6. Employers after completing doctoral coursework (according to gender)



According to student category, the percentage of those who answered universities or the like as employers was the highest for students who had worked before beginning and quit working temporarily during doctoral studies (64.8%). The percentage of foreign students who answered universities or the like as employers exceeded 60% (60.8%). Therefore, many students wanted to find a job in academia (Figure 9-7).

According to discipline, the percentage of those who answered universities or the like as employers was high in the fields of the humanities (66.6%), sociology (57.0%), and health care (56.5%). The percentage of those who answered private companies as employers was high in the fields of engineering (46.1%), physics (36.0%), and sociology (21.7%). Thus, the percentage of those who found a job in private companies was higher in the fields of science and technology than in the fields of human sciences (Figure 9-8).

Figure 9-7. Employers after completing doctoral coursework (according to student category)

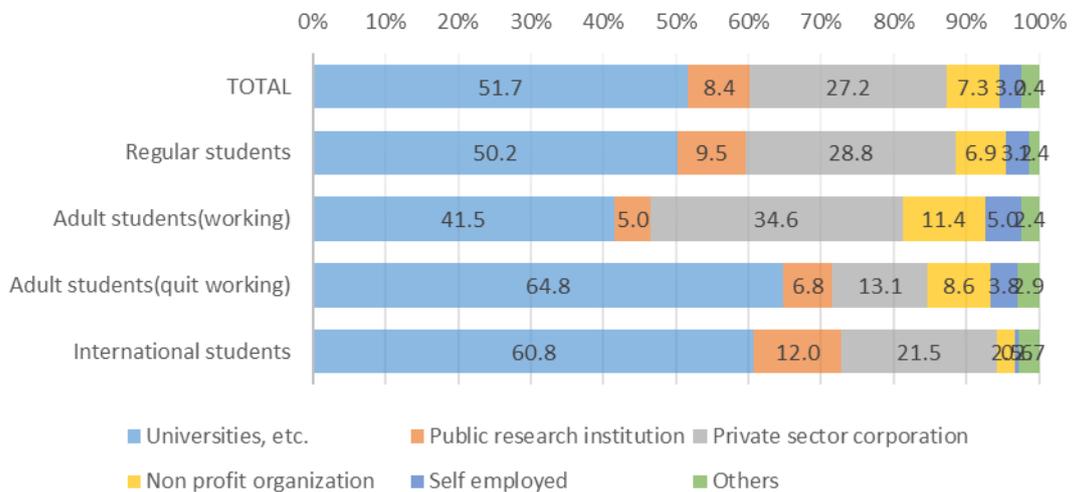
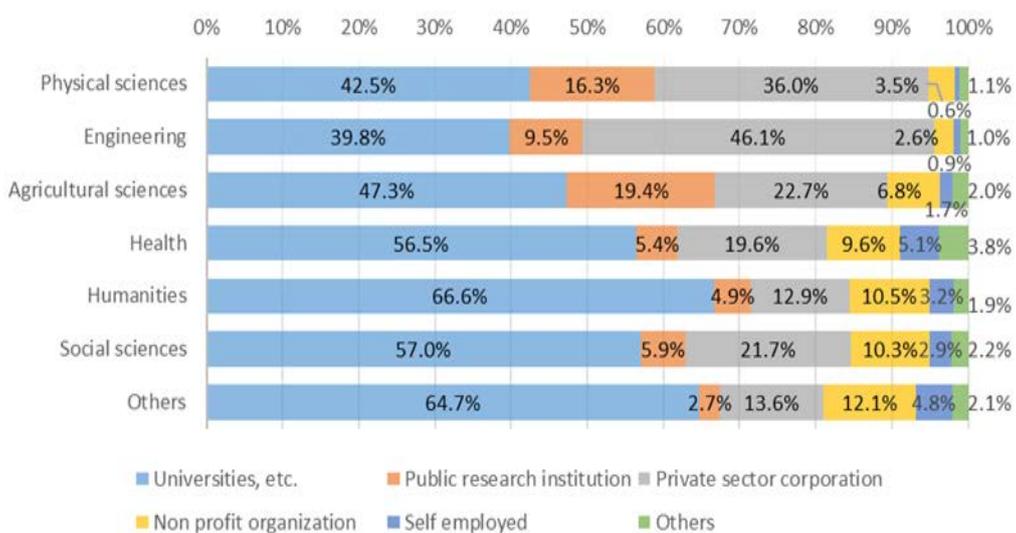


Figure 9-8. Employers after completing doctoral coursework (according to discipline)



9–3 Employment status

When asked about employment status, the percentage of those who indicated they were a regular employee or a regular staff member was 67.2%, the percentage of those who responded they were a contract employee or a fixed-term research worker was 23.5%, and the percentage of those who disclosed they were a part-time worker was 4.6% (Figure 9-9). According to gender, the percentage of those who responding they were a regular employee or a regular staff member was the highest for both men and women (men 68.8%, women: 63.4%), followed by a contract employee (men: 23.4%, women: 23.7%). The percentage of those who indicated they were a part-time worker was approximately 2.5 times higher for women than for men (men: 3.2%, women: 7.9%) (Figure 9-10).

Figure 9-9. Current employment status (overall)

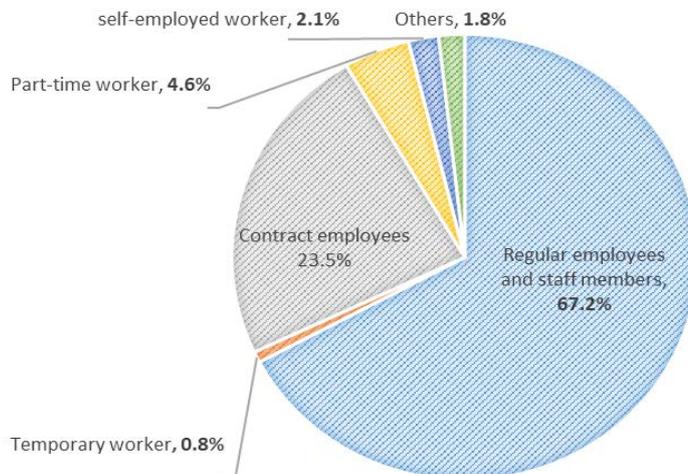
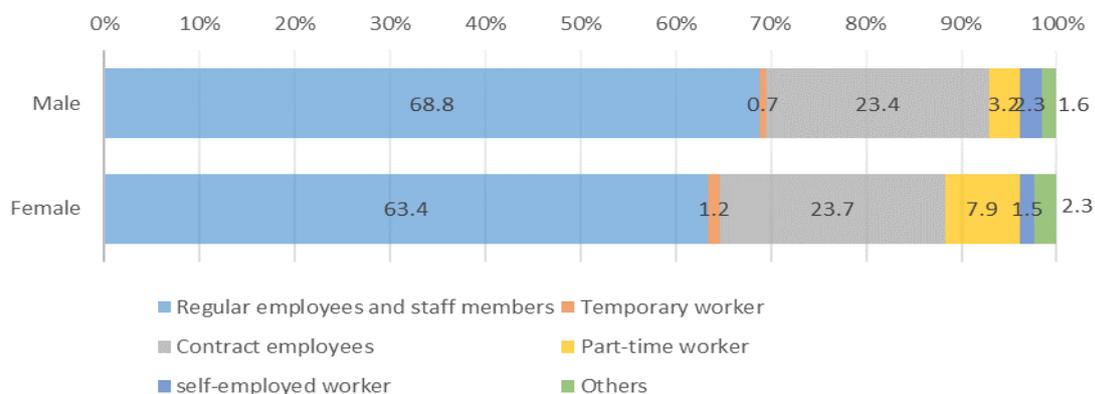


Figure 9-10. Current employment status (according to gender)



Compared with the 2012 cohort 1.5 years after completing doctoral coursework, the percentage of those who indicated being a regular employee or a regular staff member increased by 10.3% (Figure 9-11). However, regarding employment status according to student category, the percentage of those who disclosed being a regular employee or a regular staff member was 80.5% for students who had

worked before beginning and during doctoral studies and 61.1% for doctoral students. The increase in the percentage of students who worked before beginning and during doctoral studies may raise the percentage of those who will indicate being a regular employee or a regular staff member and may improve the employment situation. Therefore, a survey of the current employment situation of doctoral students may be required (Figure 9-12).

Figure 9-11. Current employment status (compared with the 2012 cohort 1.5 years after completing doctoral coursework)

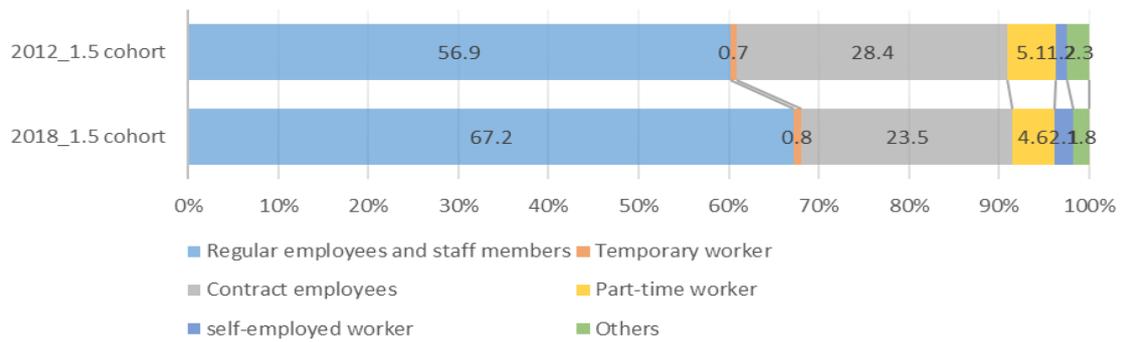
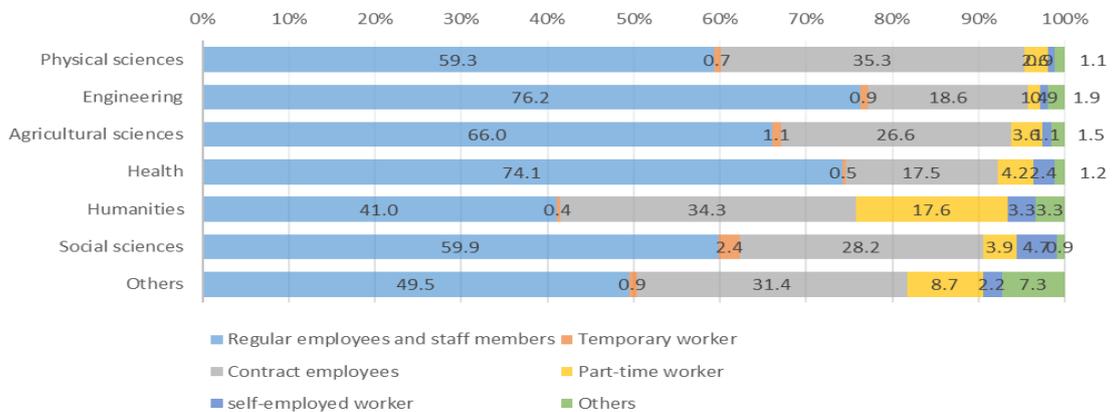


Figure 9-12. Current employment status (according to student category)



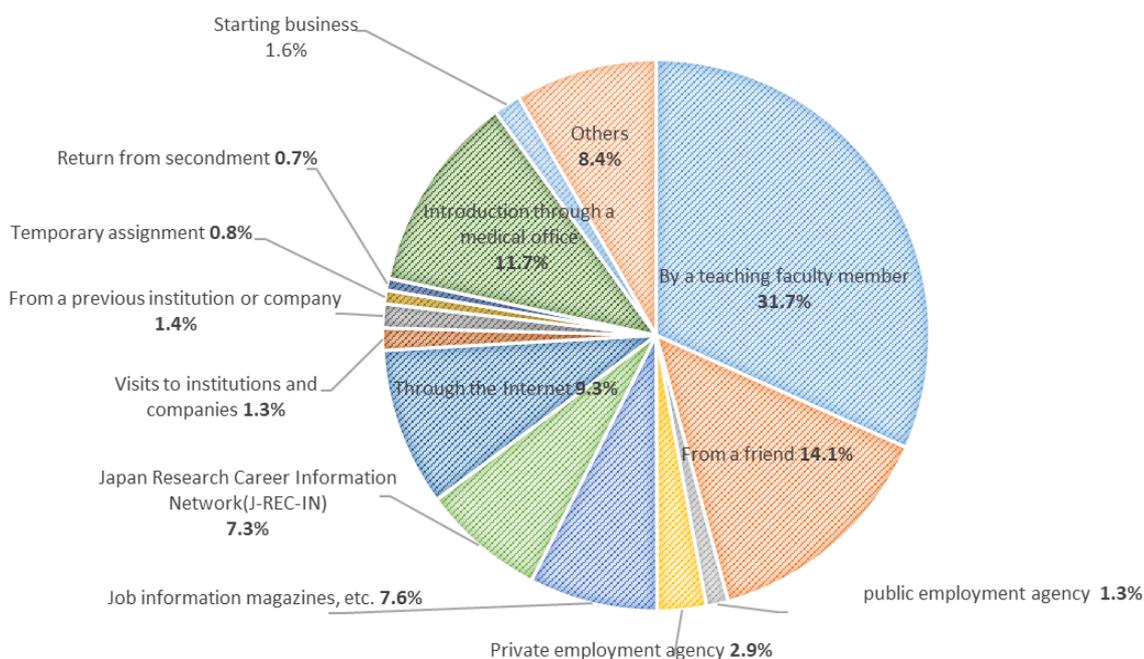
Figure 9-13. Current employment status (according to discipline)



10. Path to current employment

When asked how they sought a position with their current employer, 31.7% responded that they were introduced to the employer by a teaching faculty member (Figure 10-1). The percentage of those who indicated they received an introduction from a friend was 14.1%, and that of those who shared they received an introduction through a medical office was 11.7%. Thus, the percentage of those who connected with their current employers through personal exchanges at graduate schools, including workplaces, was nearly 60%. Others disclosed that they collected job information from the homepages of institutions or companies through the Internet (9.3%), job information sites and job information magazines (7.6%), and the Japan Research Career Information Network (JREC-IN) of the Japan Science and Technology Agency (JST)* through the Internet (7.3%). Thus, many people collected job information through the Internet themselves. Those who used support sectors of institutions, such as career centers at universities, were rare. Because the time invested into job hunting differs according to each individual because the time it takes to acquire a doctoral degree can vary, it is hard to say that institutions have systematically and sufficiently supported doctoral students in their job-seeking compared with bachelor's and master's students. To better support doctoral students in their endeavors to become employed, doctoral programs should revise their employment practices, which have relied on individuals and laboratories, and university career centers should establish a comprehensive support system.

Figure 10-1. Path to current employment (overall)



*A portal site managed by the Japan Science and Technology Agency to support the career formation and capability development of research personnel, such as researchers, research supporters, and engineers.

Regarding the path to current employment according to student category, the highest percentage of doctoral students were introduced to their current employer by a teaching faculty member (41.8%), followed by JREC-IN of JST (10.6%), and a personal relationship (10.4%) (Figure 10-2). When students who had worked before beginning doctoral studies continued a job during doctoral studies, they did not engage in job hunting. Therefore, the answers from these students greatly differed from answers from students in other categories. According to age, the percentage of students who found a job through a personal relationship increased with age. Therefore, to find a job, many students used a human network built through their experience during work (Figure 10-3).

Figure 10-2. Path to current employment (according to student category)

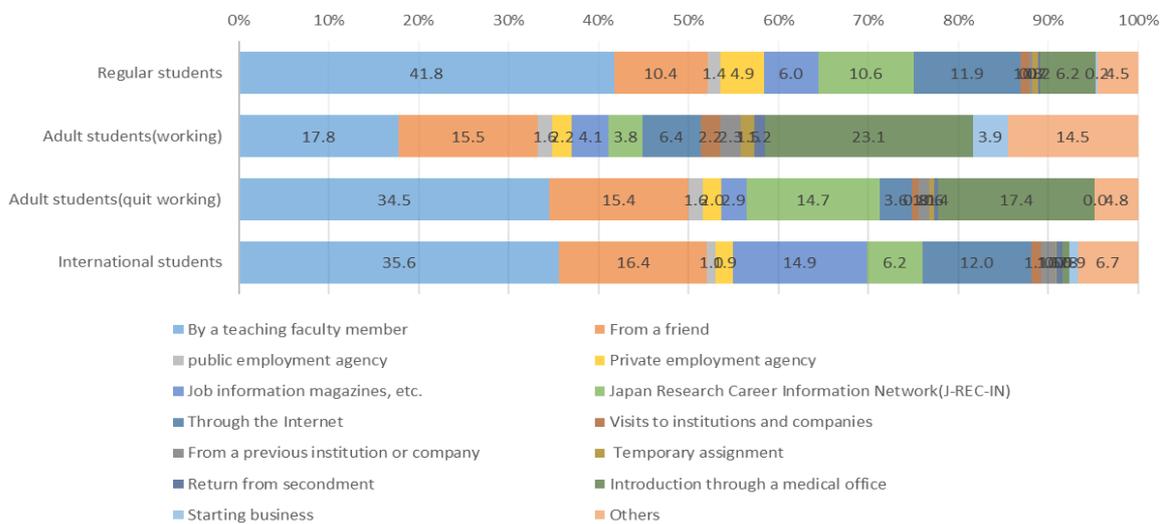
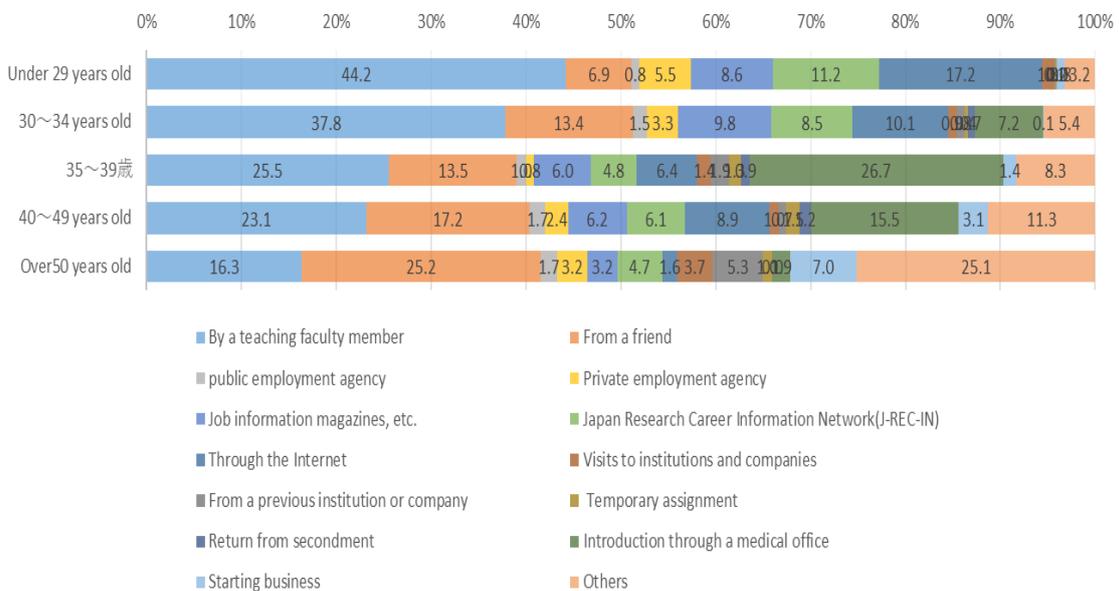


Figure 10-3. Path to current employment (according to age)



11. Income situation

When asked about their current income situation, the percentage of those who responded 4–5 million yen was the highest (14%), followed by 3–4 million yen (13.5%), and 5–6 million yen (11.8%) (Figure 11-1). According to gender, the percentage of women who selected 3–4 million yen was the highest (14.3%) and that of men who chose 4–5 million yen was the highest (14.8%) (Figure 11-1). The percentage of men who selected more than 8 million yen accounted for 26%, but the number of women who indicated more than 8 million yen accounted for only 12.7%. Thus, the difference in income between men and women was revealed (Figure 11-2).

Figure 11-1. Annual income from main employers (overall)

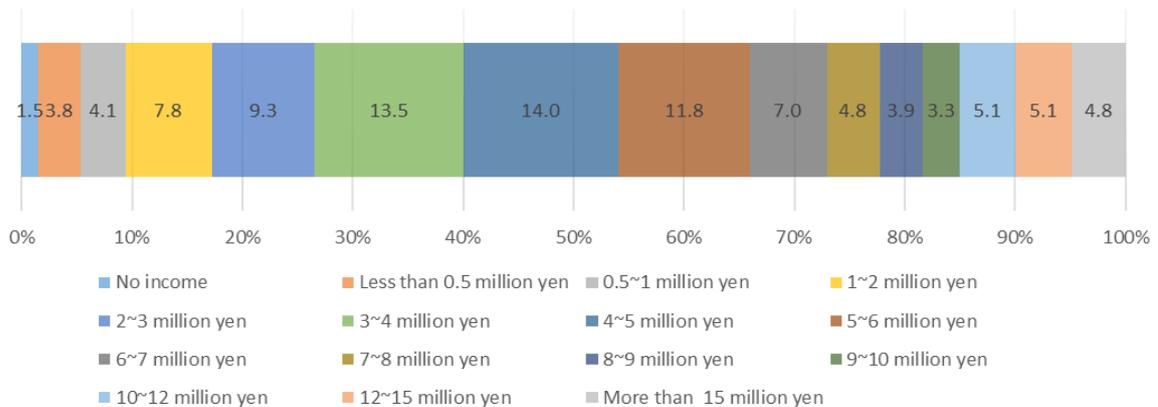
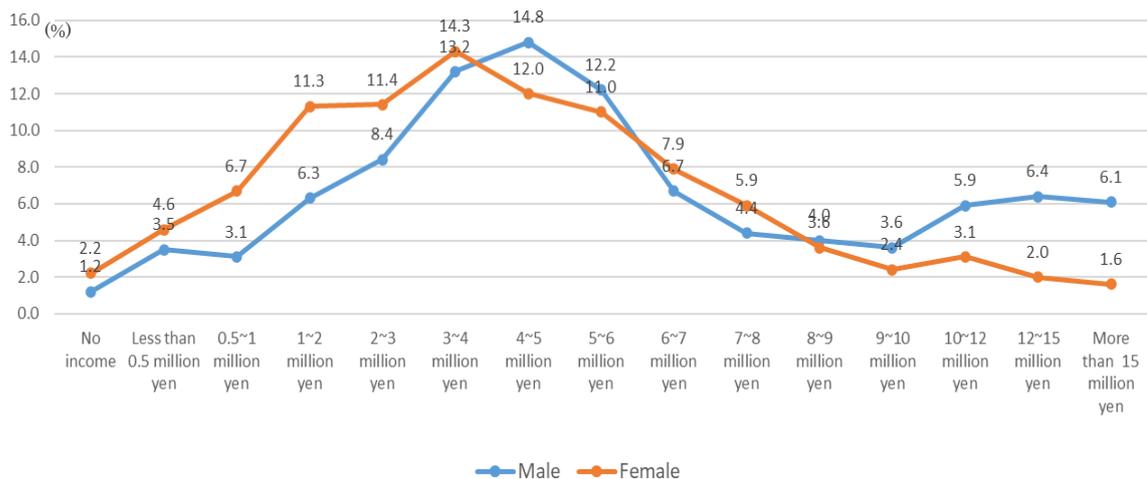


Figure 11-2. Annual income from main employers (according to gender)



According to student category, doctoral and foreign students whose annual income exceeded 8 million yen were rare, and the income of students who had worked before beginning and during doctoral studies raised the income of all the students (Figure 11-3). When considering discipline, the percentage of high-income earners was high in the fields of health care, engineering, or the like, in

which the percentage of students who had worked before beginning doctoral studies was high. In the humanities or the like, those who found jobs in academia, the number of students whose income was 1–2 million yen accounted for approximately 20% (19.6%). Therefore, the differences in the employment status among disciplines resulted in different incomes (Figure 11-4).

Figure 11-3. Annual income from main employers (according to student category)

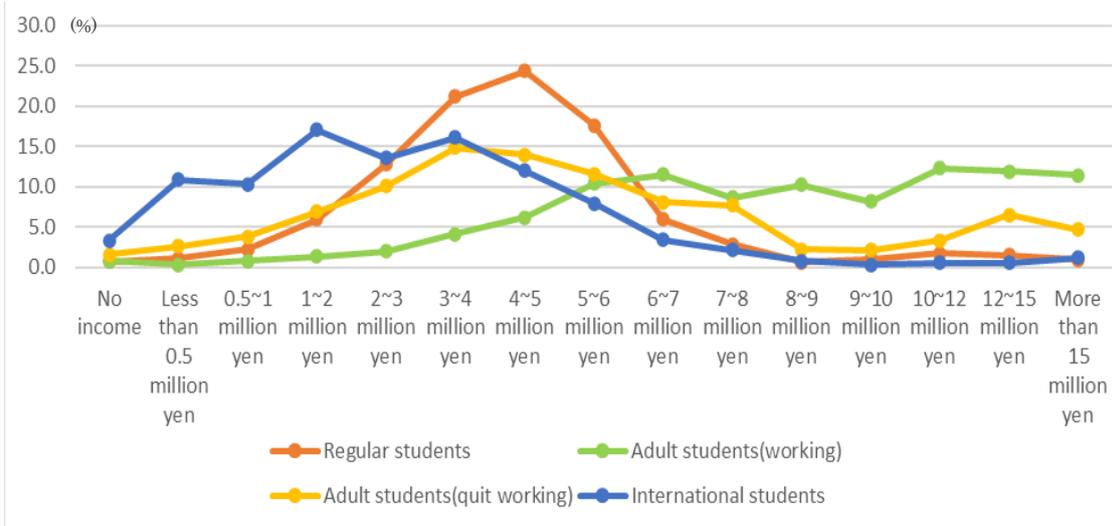
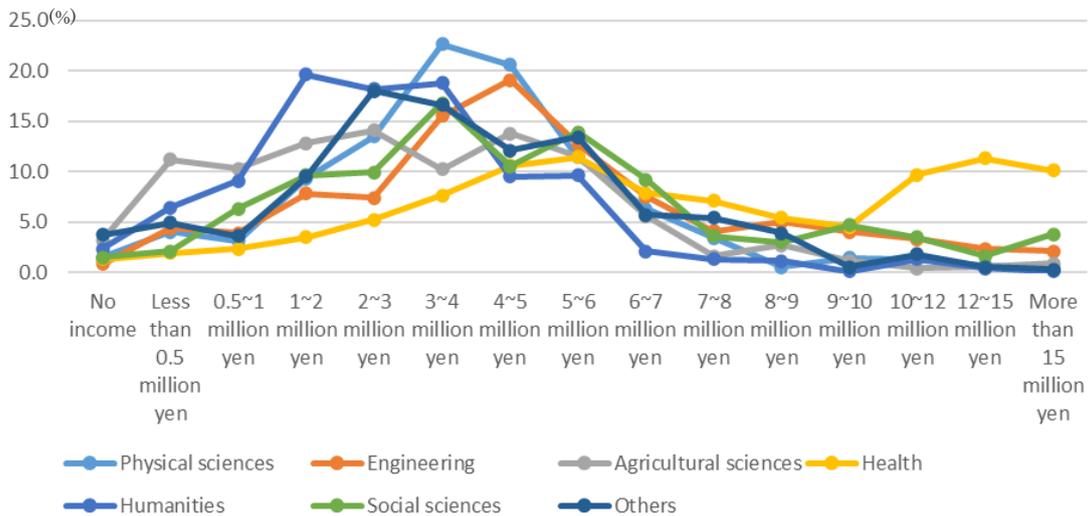


Figure 11-4. Annual income from main employers (according to discipline)



When the distribution of income classes according to the types of employers was examined, the percentage of those who worked at universities or the like and whose income was 4–5 million yen was the highest (13.2%), followed by 5–6 million yen (13.0%), and 3–4 million yen (12.6%) (Figure 11-5). The percentage of those who worked in private companies and whose income was 4–5 million was

16.0%, and that of those whose income was 3–4 million yen was 15.8%. Therefore, those who belonged to these two income classes accounted for more than 30%, as a whole; however, those who belonged to high-income classes above 8 million yen accounted for approximately 30%.

Figure 11-5. Income according to the types of employers



12. Job titles at universities or the like and public research institutes

When those who found a job in academia were asked about their job titles, the percentage of those who answered an assistant professor was the highest (25.8%), followed by a post-doctoral researcher (19.8%), a lecturer (15.2%), and a research worker (7.4%) (Figure 12-1). According to gender, the percentage of men with the job title of post-doctoral researcher was higher than that of women (men: 22.7%, women: 13.9%). Others identified their job titles as an assistant professor (men: 26.8%, women: 23.6%) and a specially appointed assistant professor (men 8.5%, women: 4.8%). In contrast, the percentage of women was higher than that of men for having a job title of a part-time lecturer (men: 3.4%, women: 7.0%) and a lecturer (men: 12.2%, women: 21.4%) (Figure 12-2).

Figure 12-1. Job titles at universities or the like and public research institutes (overall)

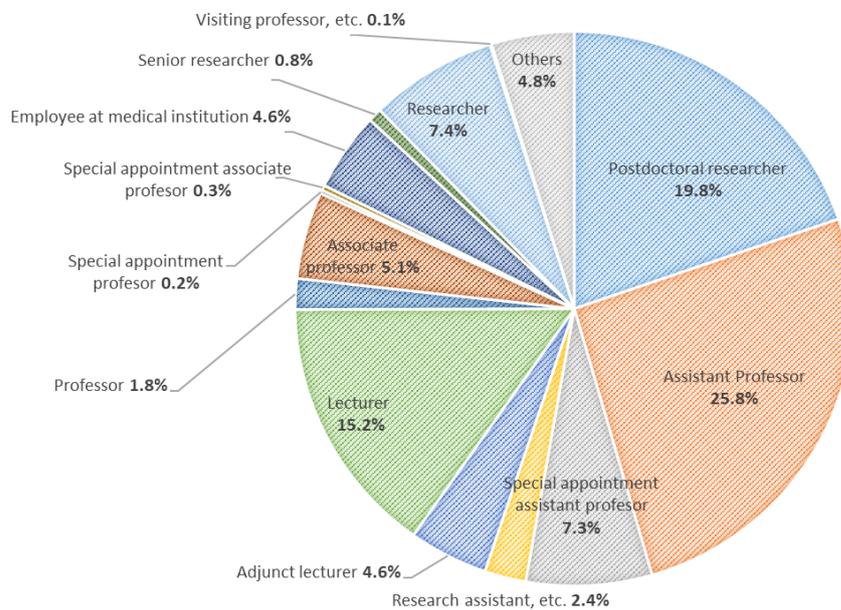
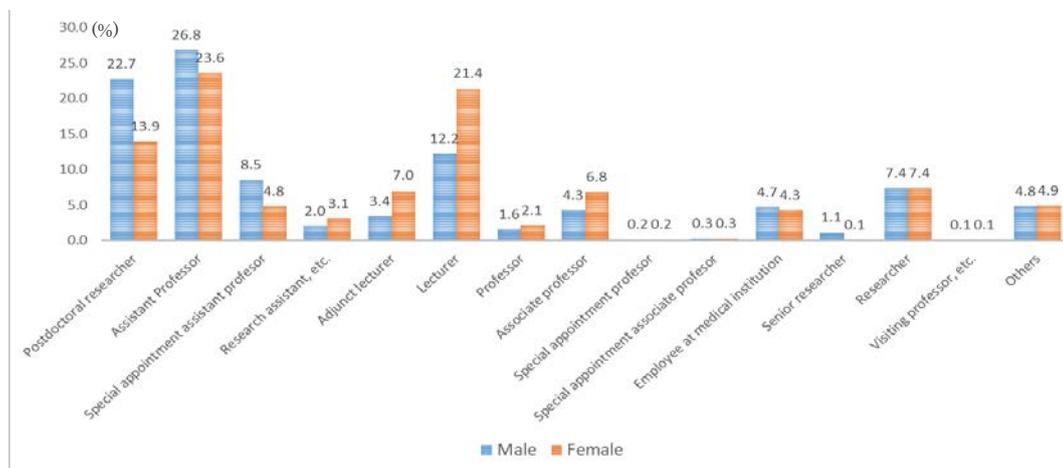


Figure 12-2. Job titles at universities or the like and public research institutes (according to gender)



According to student category, the percentage of foreign students who obtained a job as a post-doctoral researcher was the highest (28.1%). The percentage of foreign students who obtained a job as a full-time lecturer (25.8%) was higher than that of other students, so foreign students obtained a relatively stable job. The percentage of doctoral students who obtained a job as an assistant professor was the highest (33.5%), followed by a post-doctoral researcher (22.4%), a specially appointed assistant professor (10.9%), and a research worker (7.6%) (Figure 12-3). According to discipline, the percentage of those who obtained a job as a post-doctoral researcher was the highest in the field of physics (46.4%), and this percentage was higher than that in other fields by 2–3times (Figure 12-4). The percentage of those who obtained a job as a part-time lecturer was high in the humanities (28.2%). Therefore, the percentage of those who obtained a stable job differed greatly according to discipline.

Figure 12-3. Job titles at universities or the like and public research institutes (according to student category)

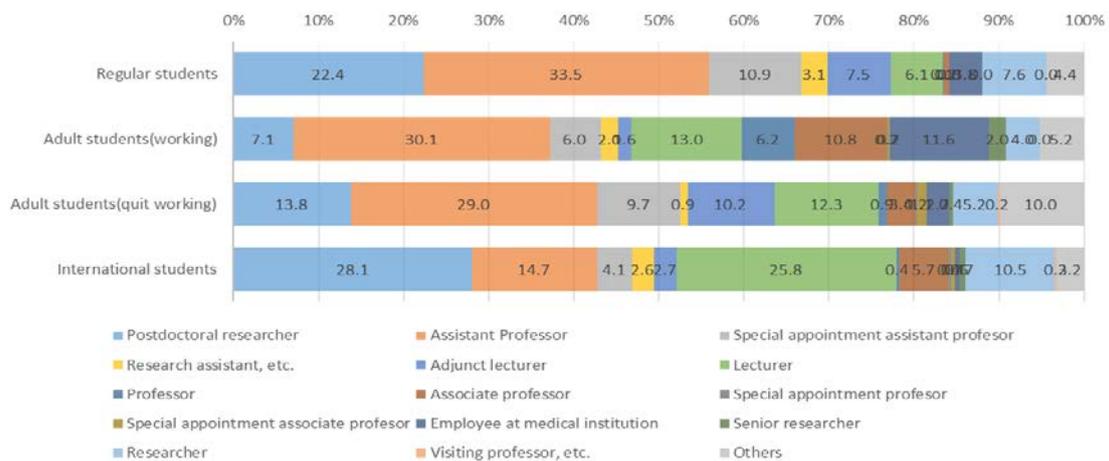
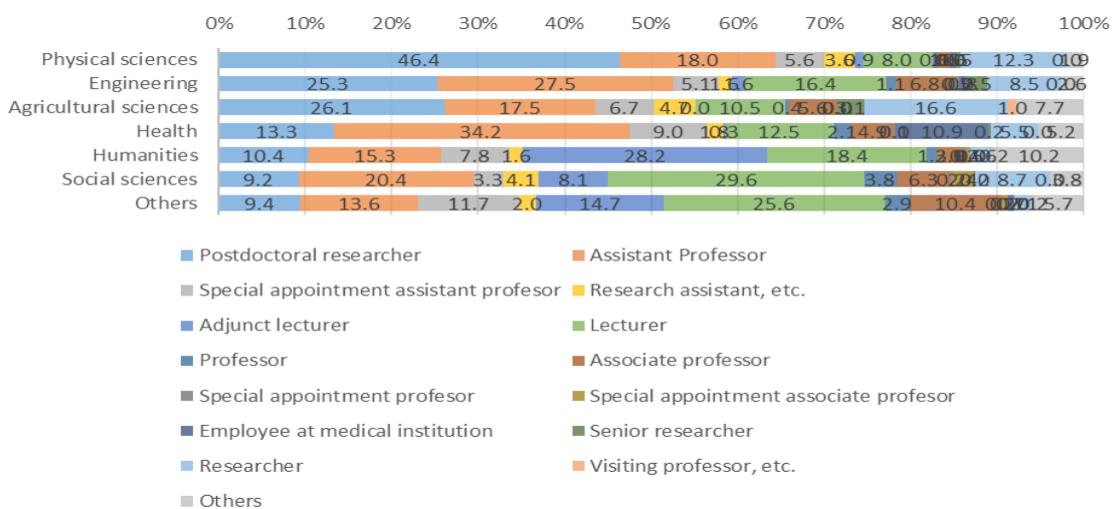


Figure 12-3. Job titles at universities or the like and public research institutes (according to discipline)



13. Fixed-term employment in academia

When asked about the presence of a fixed term, only 33.5% of those who obtained a job in academia, such as universities and public research institutes, answered that there was no fixed term (tenure) (Figure 13-1). According to age, although the percentage of those who obtained a job without a fixed term tended to increase with age, the percentages of those who were in their 40s and 50s and were fixed-term employees were 37.8% and 38.8%, respectively (Figure 13-2). Because the duration of fixed-term employment, which is not in the tenure track system, is three years in many cases, it is difficult to create long-term research and career plans. In the future, such unstable employment environments and practices in academia must be revised by examining and adjusting supporting systems and processes.

Figure 13-1. Fixed-term employment in academia (overall)

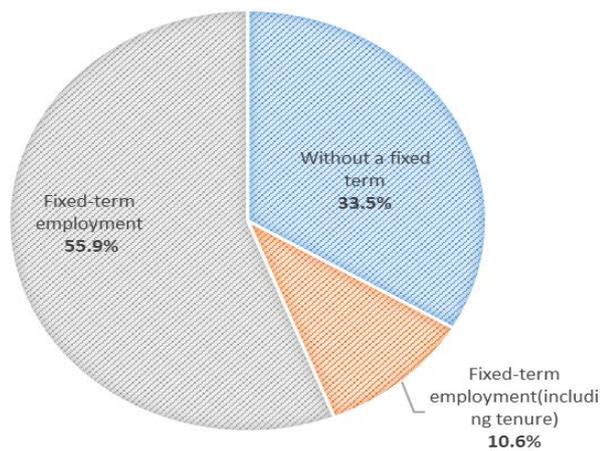


Figure 13-2. Fixed-term employment in academia (according to age)

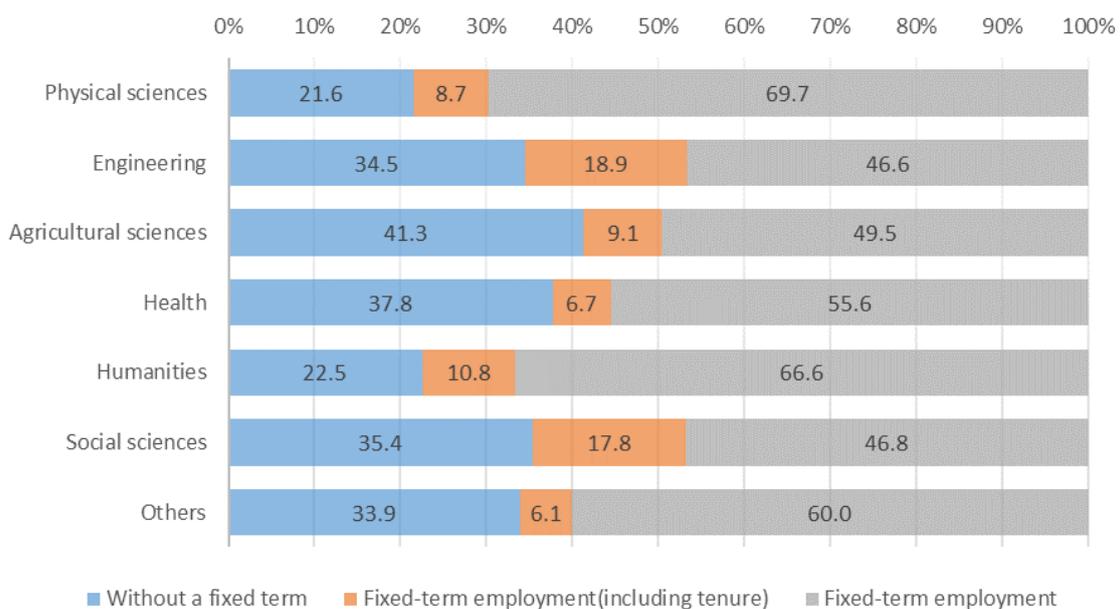


Regarding fixed-term employment according to student category, the percentage of those who obtained a job without a fixed term was the highest for students who had worked before beginning and during doctoral studies (52.0%) and the lowest for students who had worked before beginning and quit working during doctoral studies (22.5%) (Figure 13-3). Although the percentage of students who had worked before beginning doctoral studies, quit working during doctoral studies, and obtained a job in academia was high (see Figure 9-7), they could not get a stable job compared with students in other categories. The percentage of foreign students who had obtained fixed-term employment in the tenure track system was the highest (15.5%), and the percentage of foreign students who obtained a job without a fixed term was higher than that of doctoral students (foreign students: 34.7%, doctoral students: 21.2%).

Figure 13-3. Fixed-term employment in academia (according to student category)



Figure 13-4. Fixed-term employment in academia (according to discipline)



14. Satisfaction level with the current job

When asked about satisfaction level with the current job regarding “content” and “treatment,” the percentage of those who answered that “I am satisfied” and “I am somewhat satisfied” regarding job content were 23.2% and 43.5%, respectively. Thus, approximately two-thirds of the respondents were satisfied with their job content (Figure 14-1). Regarding job treatment, the percentages of those who answered that “I am satisfied” and “I am somewhat satisfied” were 17.8% and 36.7%, respectively. Thus, approximately half of the respondents were satisfied with their job treatment. The percentages of those who answered that “I am completely dissatisfied” and “I am not very satisfied” were 8.7% and 17.4%, respectively. Thus, approximately one-fourth of the respondents were dissatisfied with their job treatment. Therefore, the satisfaction level with job content was higher than that of job treatment. Regarding job content according to age, the satisfaction level was the highest for those who were below 29 years old. The percentages of those who answered that “I am satisfied” and “I am somewhat satisfied” were 28.8% and 43.1%, respectively, so more than 70% of the respondents below the age of 29 were satisfied with the contents of their current jobs (Figure 14-2). The percentages of those who were over 50 years old and answered that “I am completely dissatisfied” and “I am not very satisfied” were 6.5% and 14.4%, respectively. These figures were the highest through all ages. Therefore, regarding the satisfaction level with the current job, those who were in the same generation were divided into two groups.

Figure 14-1. Satisfaction level with current job (overall)

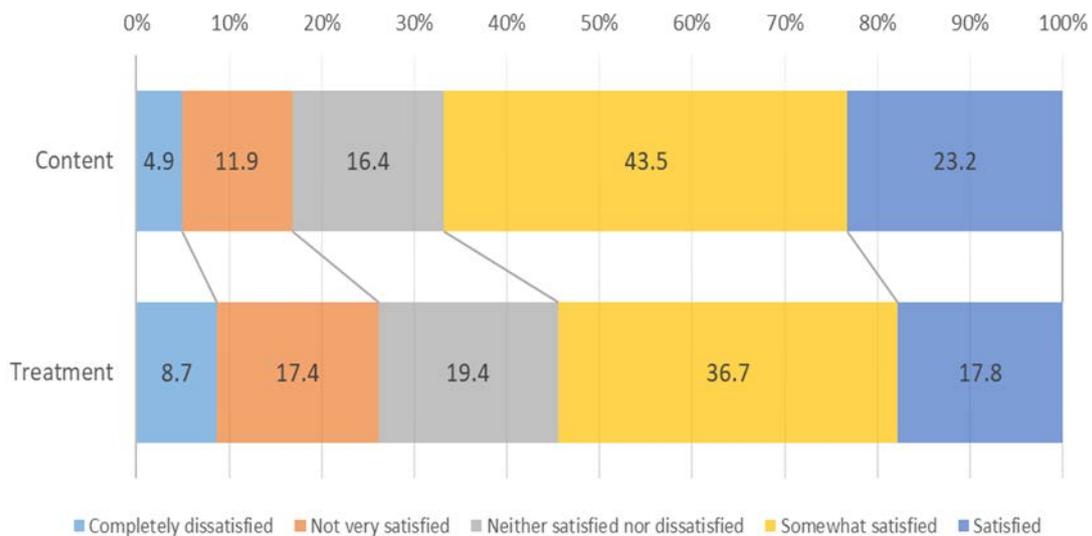


Figure 14-2. Satisfaction level with current job (according to job content and age)



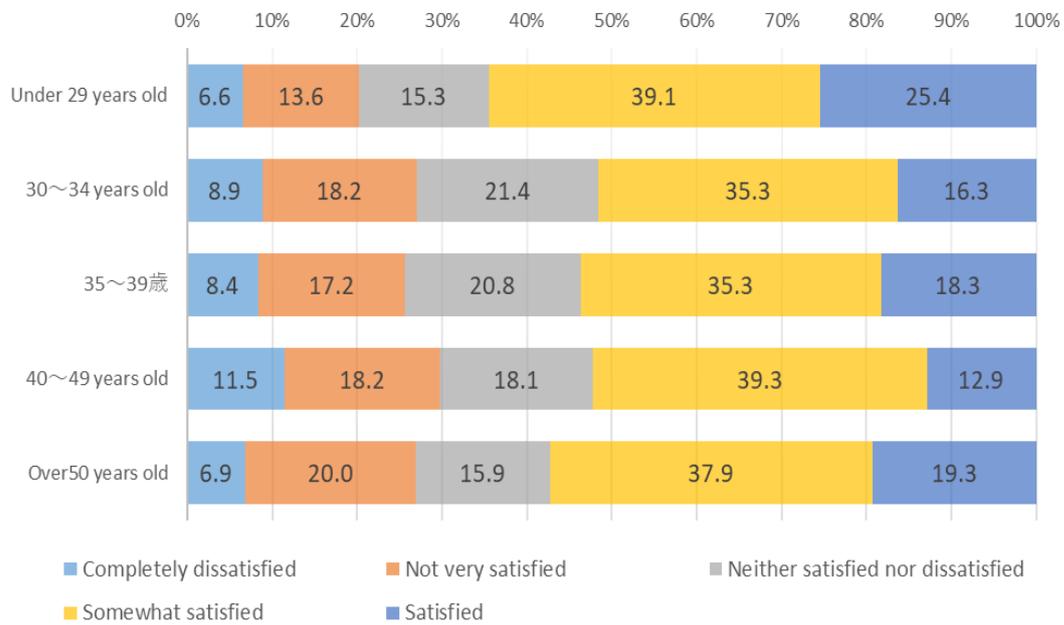
According to student category, the combined percentages of doctoral students who answered that “I am satisfied” and “I am somewhat satisfied” was the highest (70.8%), which means that the satisfaction level of doctoral students with their current jobs was the highest, and the percentage that was not satisfied with their current jobs was the lowest (3.6%) (Figure 14-3). The percentage of students who worked before beginning and during doctoral studies answering that “I am satisfied” was lower than that of other students, and the combined percentages of these students responding that “I am completely dissatisfied” (5.0%) and “I am not very satisfied” (13.9%) was high. Thus, the satisfaction level of these students with their current jobs was generally low.

Regarding job treatment, the combined percentages of those who were younger than 29 years old answering “I am satisfied,” “I am somewhat satisfied,” and “I cannot say either” exceeded 70%, so the satisfaction level of these students with their jobs was the highest. Moreover, the percentage of these students who selected that “I am completely dissatisfied” was the lowest (3.6%), compared with those of other students (Figure 14-4). The job treatment dissatisfaction level of those who were 40–49 years old was the highest. The percentages of these students answering that “I am completely dissatisfied” and “I am not very satisfied” were 11.5% and 18.2%, respectively. Therefore, approximately 30% of these students were dissatisfied with their current treatments of jobs. Because these people had been in the period of poor employment opportunities, the gap between age and job treatment might contribute to the above-mentioned results.

Figure 14-3. Satisfaction level with current job (job content and according to student category)



Figure 14-4. Satisfaction level with current job (job treatment and according to age)

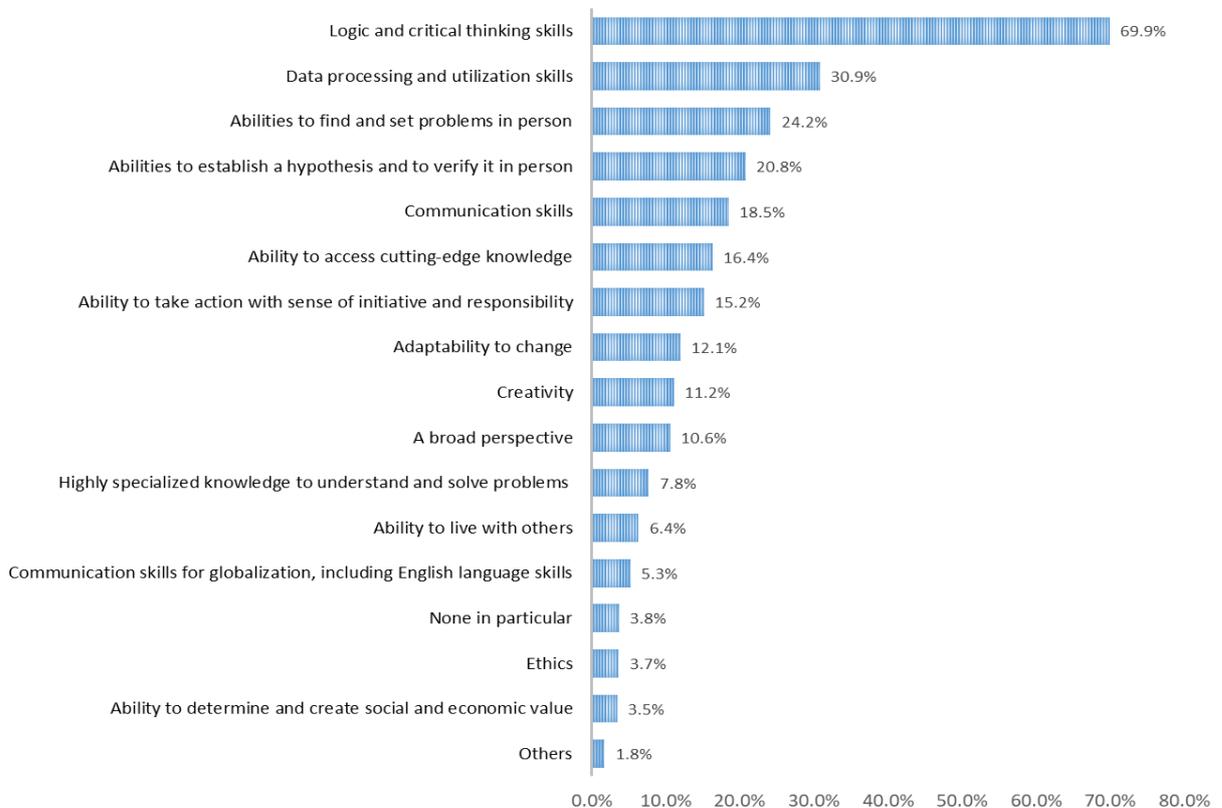


15. Effects of being doctoral students on their jobs

15-1 Skills which students have obtained during doctoral studies that are useful for their current jobs

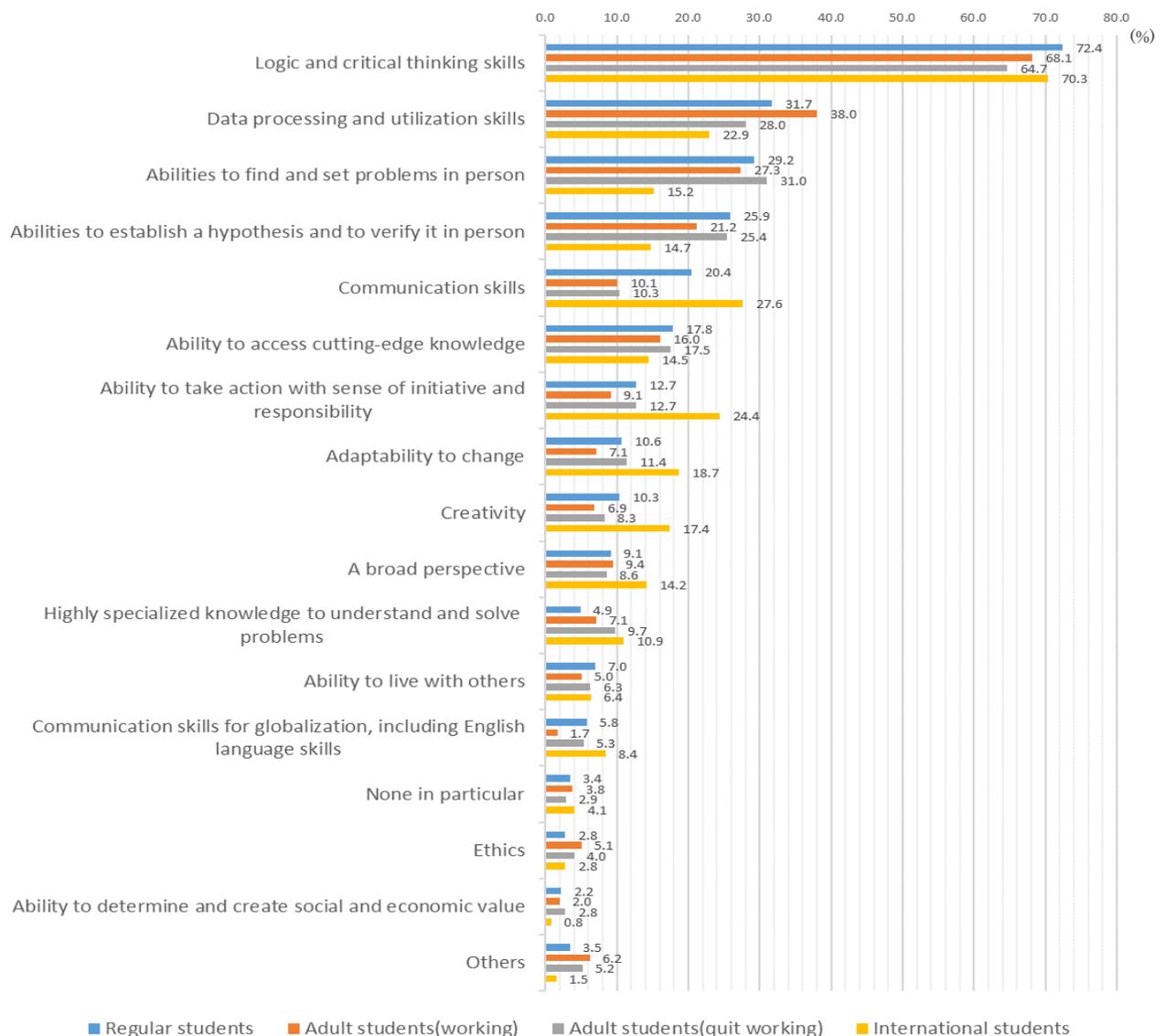
When asked what skills students had obtained during doctoral studies that were useful for their current jobs, the percentage of those who responded “logic and critical thinking skills” was the highest (69.9%), followed by “data processing and utilization skills” (30.9%), “abilities to find and set challenges in person” (24.2%), and “abilities to establish a hypothesis and to verify it in person” (20.8%) (Figure 15-1). Among open-ended responses, “writing ability,” “patience,” “human network,” and “presentation skills” were common. Moreover, “a global point of view was fostered,” “sophisticated and scientific foreign language skills were fostered,” “the range of research was expanded, and the quality of research was improved,” and “scientific knowledge in my specific field was obtained” were additional responses. Thus, capabilities concerning internationality and foreign languages were improved and knowledge and understanding in the research field were deepened during doctoral studies.

Figure 15-1. Skills which students have obtained during doctoral studies that are useful for their current jobs



According to student category, the percentage of doctoral students who chose “logic and critical thinking skills” was the highest (72.4%), and the percentages of doctoral students who responded “abilities to find and set problems in person” (29.2%) and “abilities to establish a hypothesis and to verify it in person” (25.9%) were higher than that of other categories of students (Figure 15-2). The percentages of foreign students who responded “communication skills” (27.6%), “acting power equipped with identity and a sense of responsibility” (24.4%), “adaptability to change” (18.7%), and “creativity” (17.4%) were high. Thus, many foreign students answered that they had acquired capabilities concerning leadership.

Figure 15-2. Skills which students have obtained during doctoral studies that are useful for their current jobs (according to student category)



Students were asked to identify which activities in a doctoral course could help them acquire “logic and critical skills,” “data processing and utilization skills,” and “abilities to establish a hypothesis and to verify it in person,” which were the top four capabilities in the previous section. Regarding “logicality and critical skills,” the percentage those who selected “research activities in person” was the highest (39.6%), followed by “exchanges with persons in a laboratory, to which the respondent belonged” (26.2%) and “an external announcement of research results” (15.2%) (Figure 15-3). Regarding “data processing and utilization skills,” the percentage of those who selected “research activities in person” was the highest (58.9%), followed by “exchanges with persons in a laboratory, to which the respondent belonged” (13.0%) and “an external announcement of research results” (12.6%) (Figure 15-4).

Figure 15-3. Activities in a doctoral course through which students have acquired skills (logicality and critical skills)

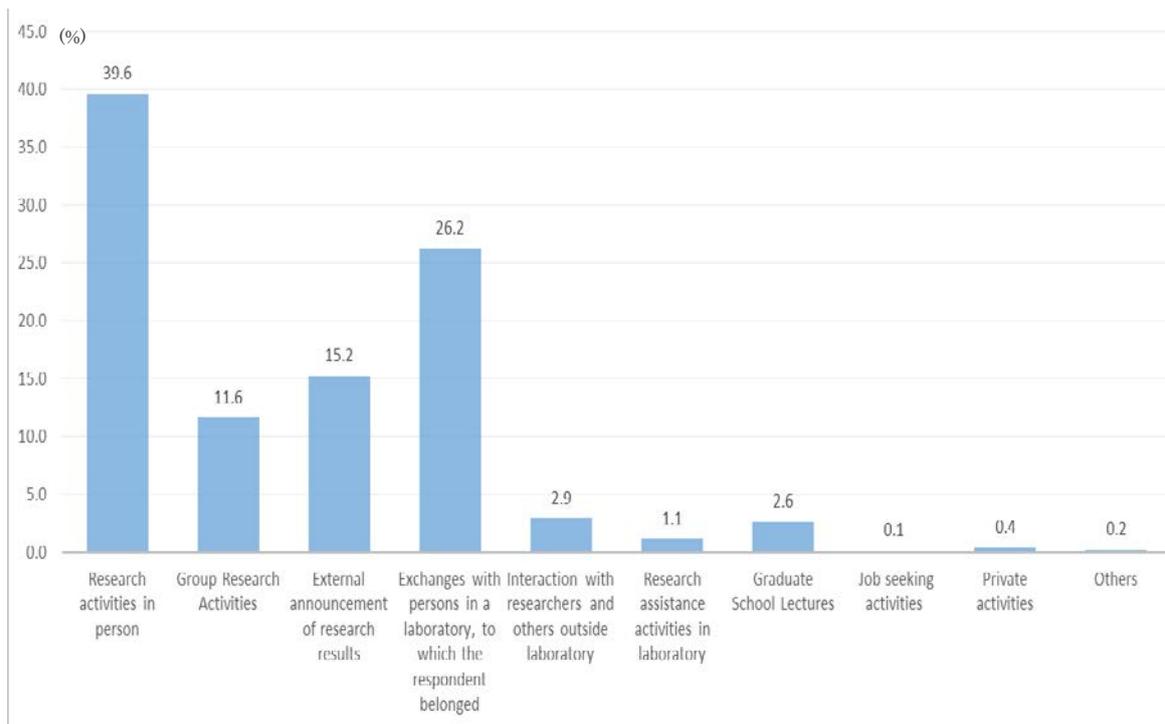
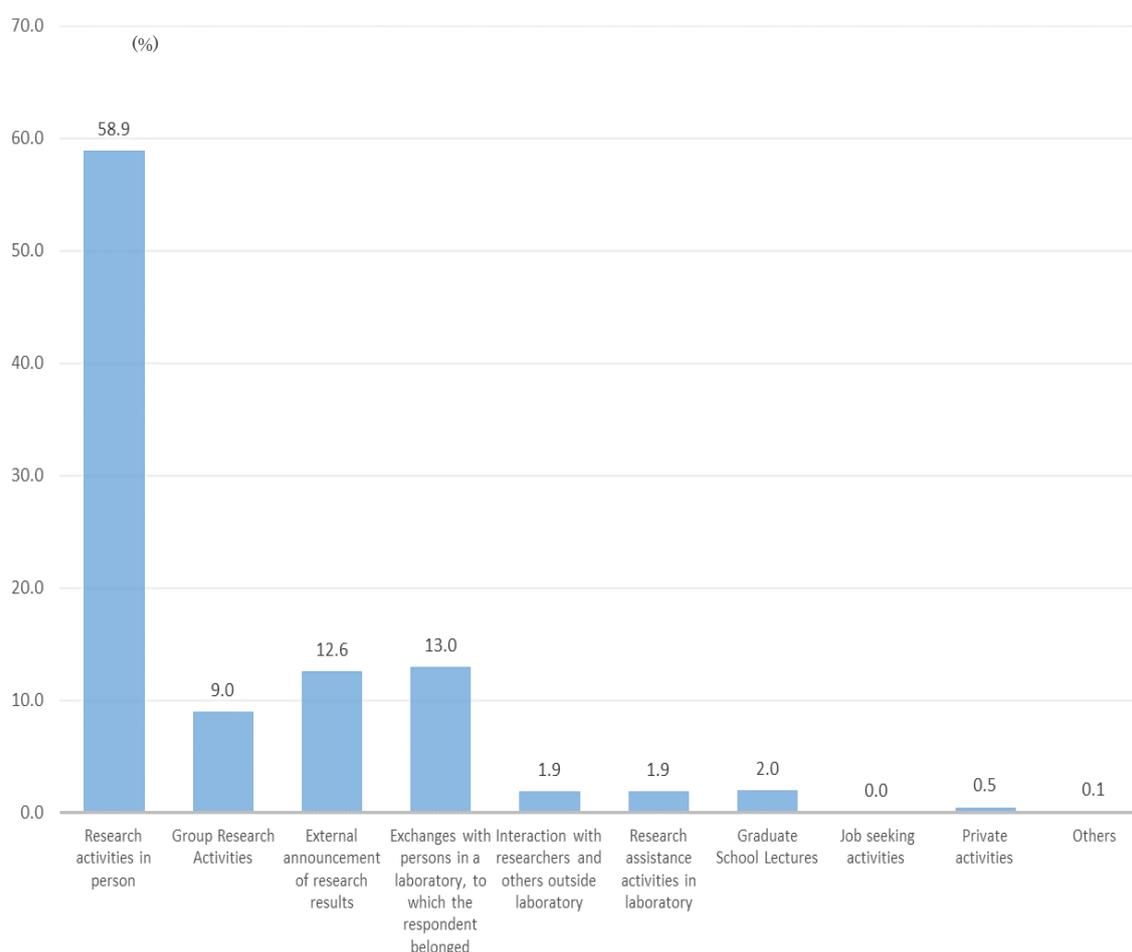
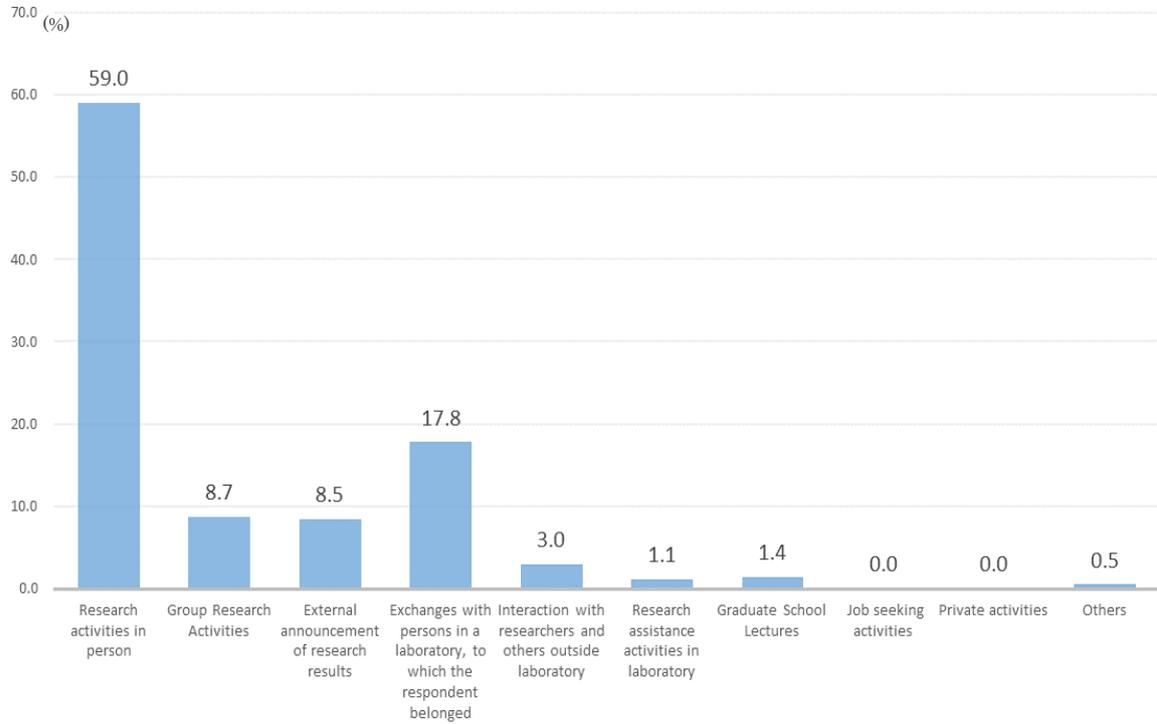


Figure 15-4. Activities in a doctoral course through which students have acquired skills (data processing and utilization skills)

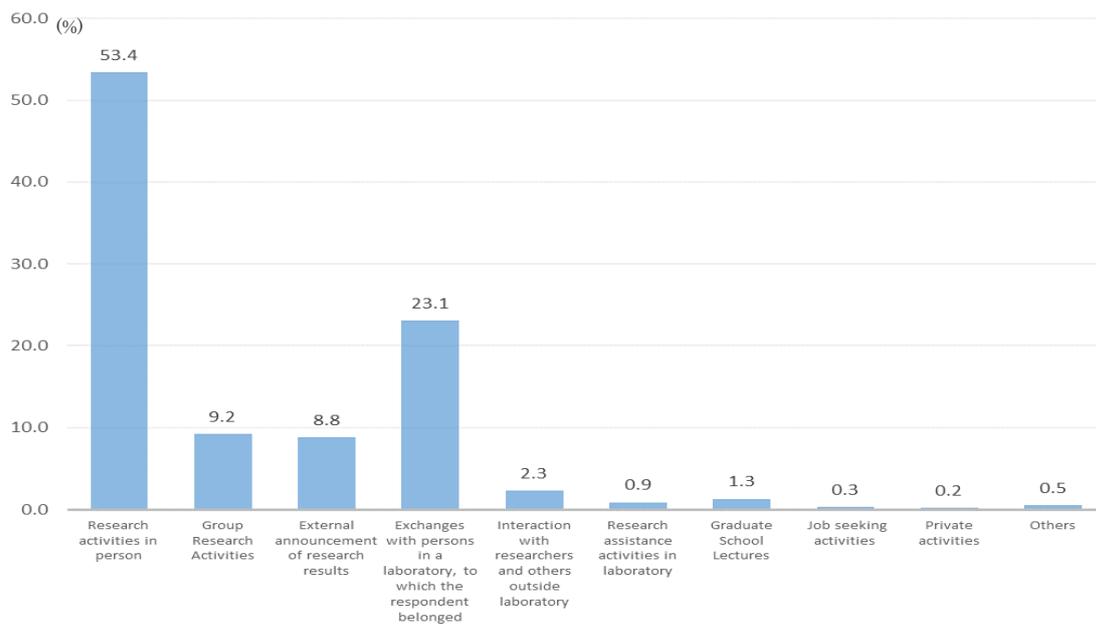


Regarding “abilities to find and set problems in person,” the percentage of those who selected “research activities in person” was the highest (59.0%), followed by “exchanges with persons in a laboratory, to which the respondent belonged” (17.8%) and “research activities by groups” (8.7%) (Figure 15-5). Regarding “abilities to establish a hypothesis and to verify it in person,” the percentage of those who responded “research activities in person” was the highest (53.4%), followed by “exchanges with persons in a laboratory, to which the respondent belonged” (23.1%) and “research activities by groups” (9.2%). Students who indicated that they had acquired abilities to establish a hypothesis and to verify it though university curricula, such as lectures, were seldom found (Figure 15-6).

**Figure 15-5. Activities in a doctoral course through which students have acquired skills
(abilities to find and solve challenges in person)**



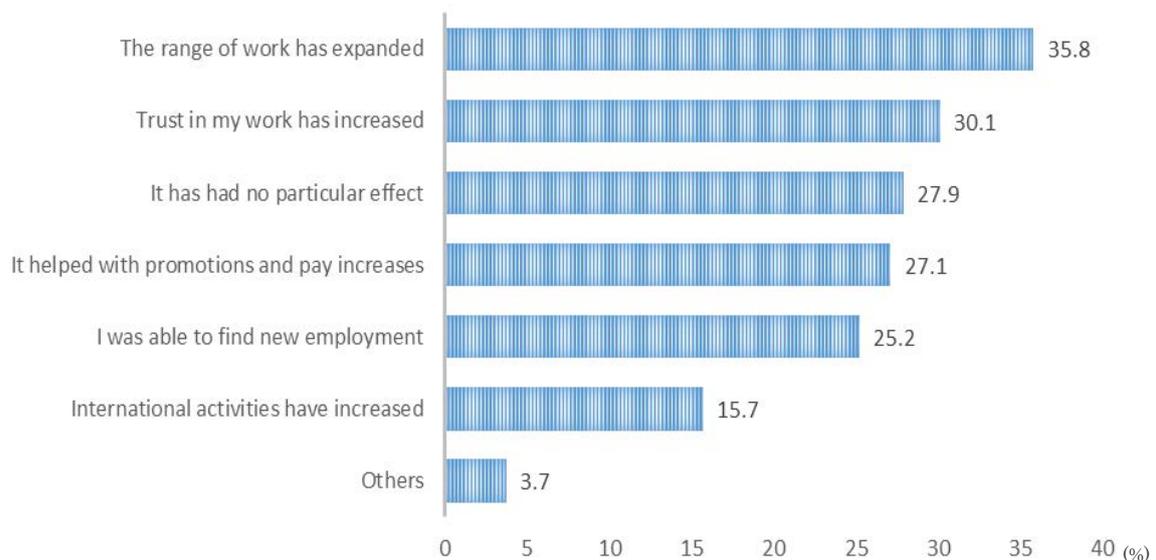
**Figure 15-6. Activities in a doctoral course through which students have acquired skills
(abilities to establish a hypothesis and to verify it in person)**



15—2 Effects of obtaining a doctoral degree (completing doctoral coursework) on current jobs

When asked about the effects of obtaining a doctoral degree (completing doctoral coursework) on their current jobs, the percentages of those who responded “the range of work has expanded” and “trust in my work has increased” were 35.8% and 30.1%, respectively (Figure 15-7). Moreover, the percentages of those who indicated “promotion and salary raise could be obtained or were expected to be obtained” and “I could get a new job” were 27.1% and 25.2%, respectively. Thus, obtaining a doctoral degree (completing doctoral coursework) contributed to career advancement. Responses to open-ended questions included: “I could autonomously perform research” and “I can act as an expert.” Thus, those who obtained a doctoral degree (completed a doctoral course) could act as researchers and experts. Moreover, “I have launched my own business” and “I could be a university faculty member when I was 60 years old” were also common responses. Thus, obtaining a doctoral degree (completing doctoral coursework) prepared the way for pivoting to a new career. In contrast responses such as “getting a job becomes more difficult” and “there is a difficulty in reemployment” were also found. Due to a mismatch between educational background and hiring requirements, career development became difficult for some. This suggests a problem with overqualification. One respondent stated “I became a post-doctoral researcher and my income decreased.” Thus, when entering academia, limited-term employment was provided, resulting in decreased income.

Figure 15-7. Effects of obtaining a doctoral degree on current jobs (overall)



16. Situation of current research activities

16-1 Presence of research activities

When asked about current research activities aiming at paper presentation and patent acquisition, the percentage of those who indicated that they were continuously performing research was 74.9% (Figure 16-1). According to gender, the percentage of men who were continuously performing research was higher than that of women (men: 76.4%, women: 71.4%). Thus, more than 70% of the subjects were continuously performing research (Figure 16-2). According to student category, the percentage of foreign students who were continuously performing research was the highest (81.3%) (Figure 16-3).

Figure 16-1. Situation of current activities (overall)

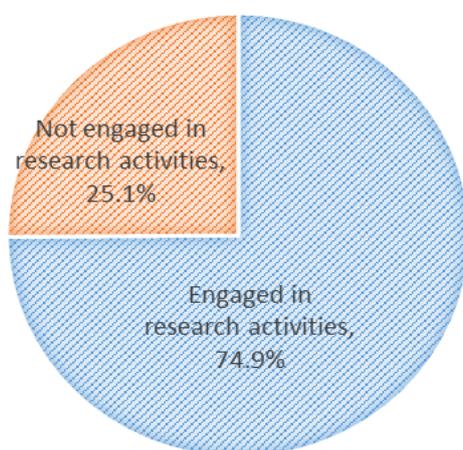


Figure 16-2. Situation of current research activities (according to gender)

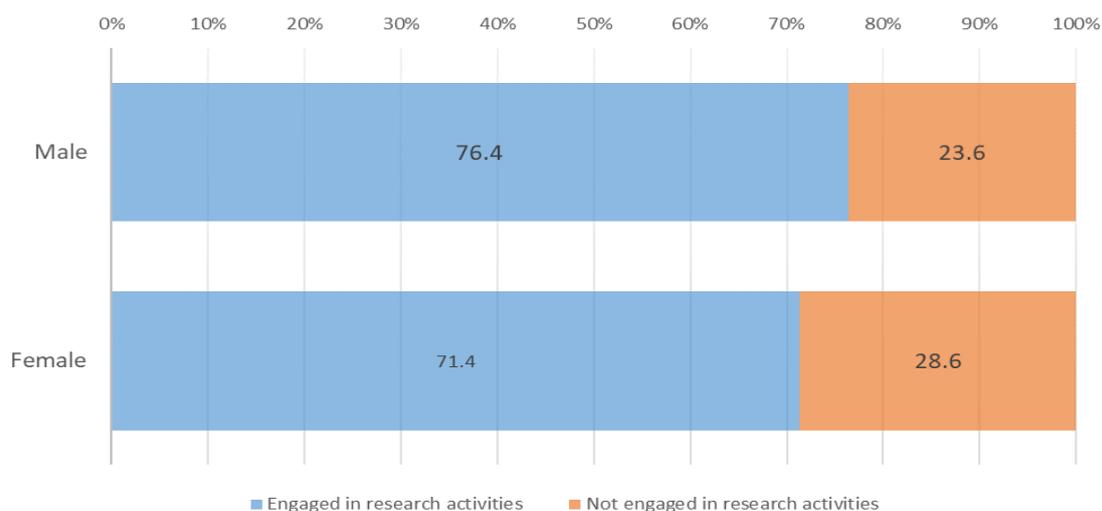


Figure 16-3. Situation of current research activities (according to student category)



16-2 Situation of getting research funding

We asked those who affirmed performing research in their current jobs about the presence of research funding. The percentages of those who indicated receiving internal funding, external funding, and competitive funding in external funding (referred to as competitive funding in this section) were 28.1%, 28.9%, and 23.5%, respectively (Figure 16-4). Regarding competitive funding according to student category, the percentage of students who have worked before beginning and quit working temporarily during doctoral studies was the highest (34.4%), followed by doctoral students (32.5%), students who had worked before beginning and during doctoral studies (25.3%), and foreign students (12.0%) (Figure 16-5).

Figure 16-4. Situation of acquiring research funding

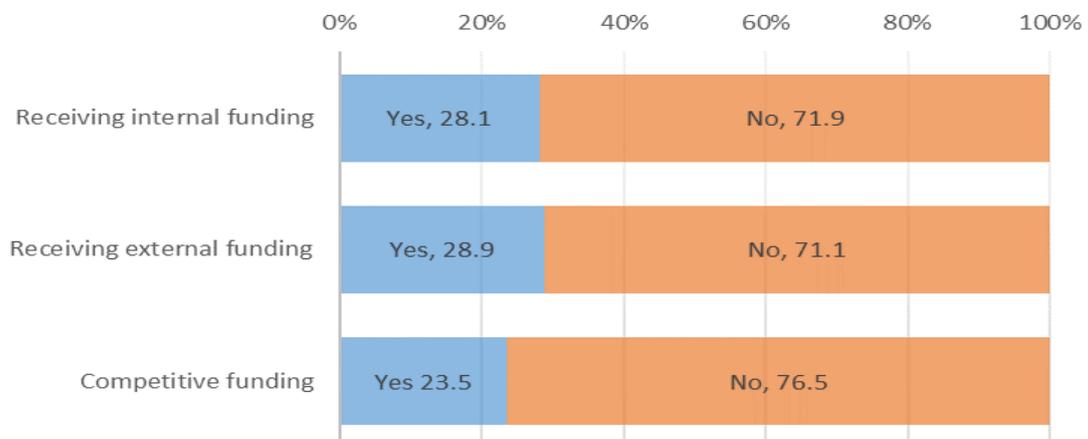
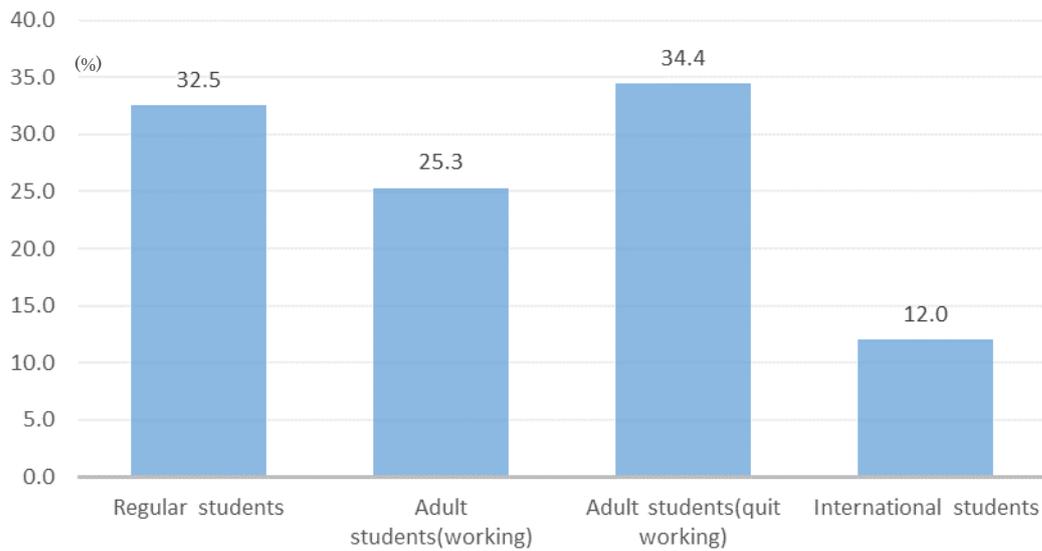


Figure 16-5. Situation of acquiring competitive funding (according to student category)



16-3 Role in current research

When asked about their role in their current research, the percentages of those who answered that “I am responsible for a presented paper” (35.8%), “I am substantially responsible for preparing and executing the budget for an issue in charge” (20.7%), “I am responsible for instructing a particular subordinate” (13.7%), “I have an independent laboratory” (13.0%), and “I am substantially responsible for preparing and executing the budget for a group in my laboratory” (7.9%) (Figure 16-6). According to gender, the percentage of women was higher than that of men regarding “I am responsible for a presented paper” (men: 35.6%, women: 36.4%), “I am substantially responsible for preparing and executing the budget for an issue in charge” (men 19.8%, women: 22.8%), and “I have an independent laboratory” (men: 11.5%, women: 16.4%). Therefore, there was no great difference in role in current research between men and women (Figure 16-7).

Figure 16-6. Role in current research (overall)

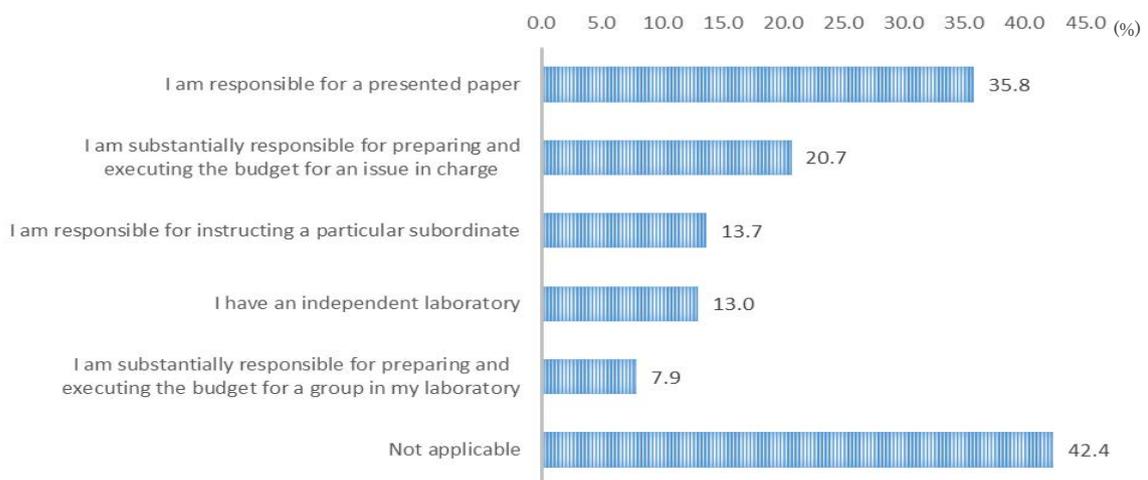
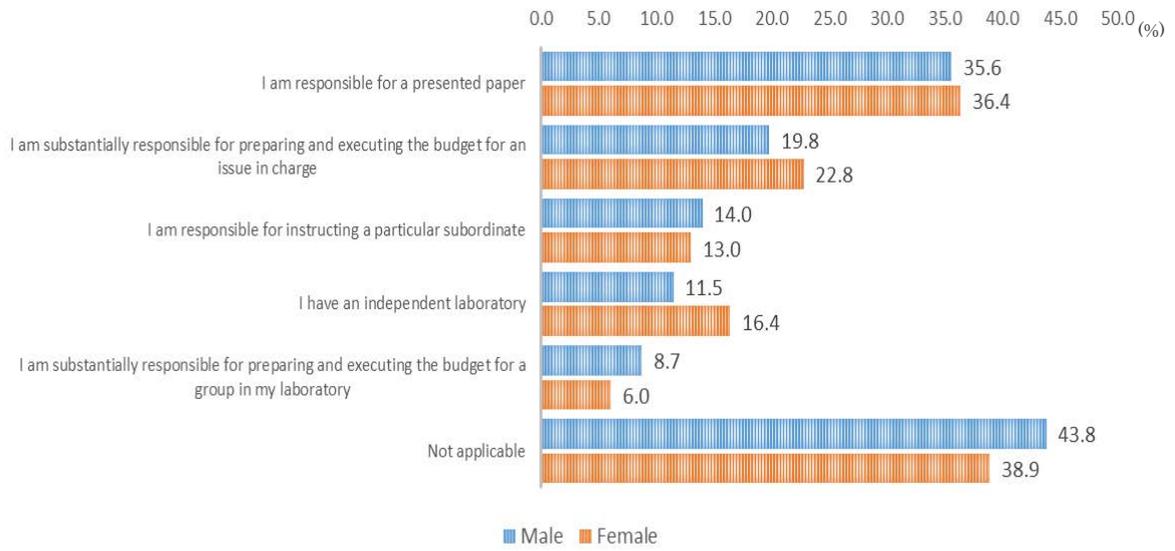


Figure 16-7. Situation of authority in research (according to gender)



17. Career prospects

When asked about future career prospects, the percentage of those who responded “I want to get a stable position as a researcher at a university or a public research institute” was the highest (31.3%), followed by “I do not place too much importance on my employer, but I want to get a job in which my research experience can be utilized” (23.5%) and “I want to get a job other than one tied to research” (14.8%) (Figure 17-1). Those who wanted to have a career as a researcher or to get a research position accounted for approximately 50%, but those who did not place too much importance on their employers or research positions accounted for approximately 40%. According to gender, although the percentage of men who wanted to get a research position was slightly higher than that of women, no large difference was observed in the trend of answers between men and women (Figure 17-2).

Figure 17-1. Future career prospects (overall)

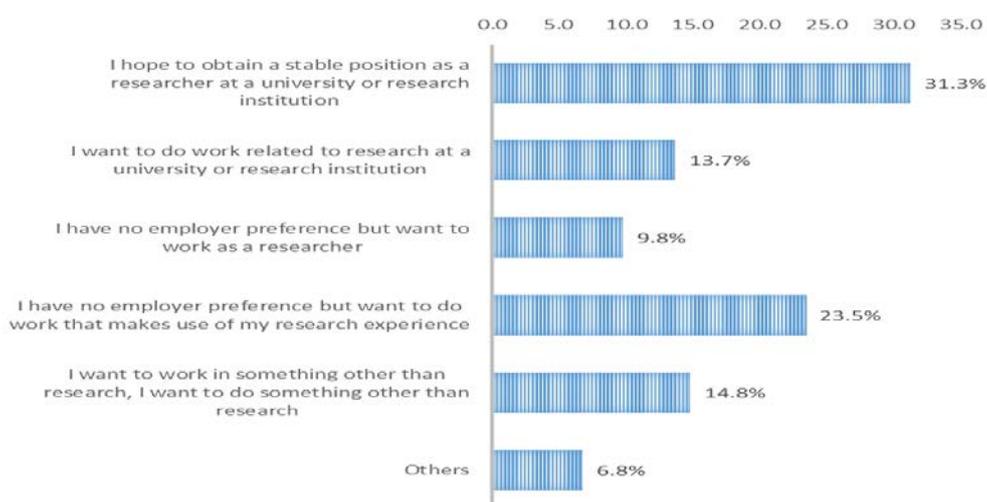
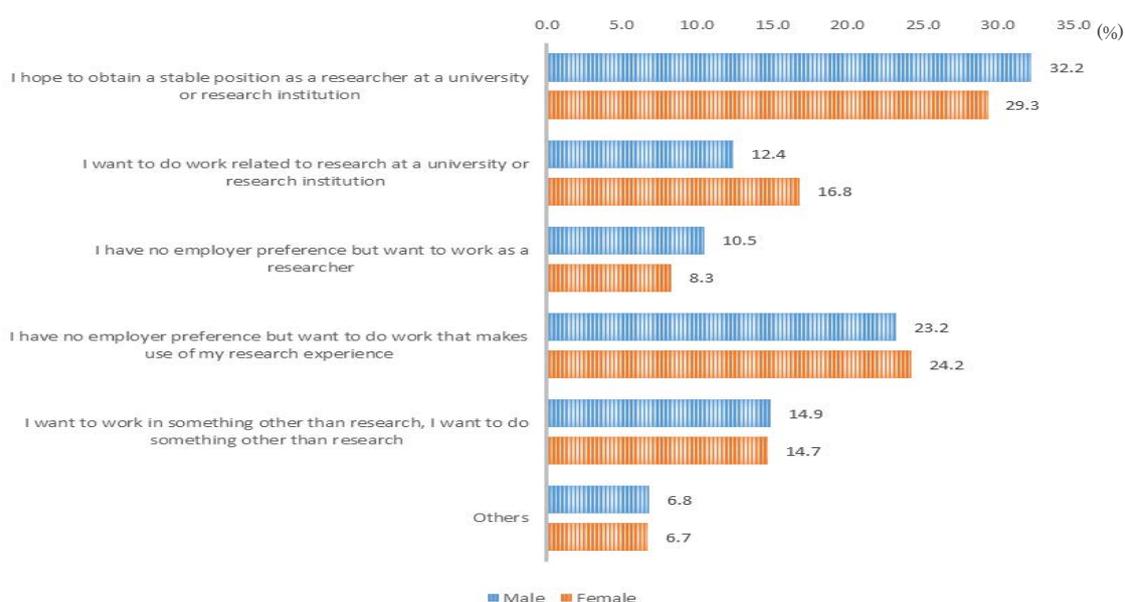


Figure 17-2. Future career prospects (according to gender)



Regarding future career prospects according to student category, the percentage of those who wanted to continue research in academic settings, such as universities and public research institutes, was the highest for foreign students (Figure 17-3). The research orientation of students who had worked before beginning and quit working temporarily during doctoral studies was stronger than that of students who had worked before beginning and during doctoral studies. Regarding “I want to get a stable position as a researcher at a university or a public research institute,” the percentage of students who had worked before beginning and during doctoral studies was 19.0% and that of students who had worked before beginning and quit working temporarily during doctoral studies was 32.8%. Regarding “I do not place too much importance on my employer, but I want to get a job as a researcher,” the percentage of students who had worked before beginning and during doctoral studies was 6.8% and that of students who had worked before beginning and quit working temporarily during doctoral studies was 9.4%. Thus, large differences were observed in these two responses between these two categories of students. According to discipline, the percentage of those who wanted to get research positions was low in the field of agriculture (21.1%). However, the percentage of those who answered “I want to get or accept a job other than one tied to research” was the highest in the field of agriculture (24.0%) (Figure 17-4).

Figure 17-3. Future career prospects (according to student category)

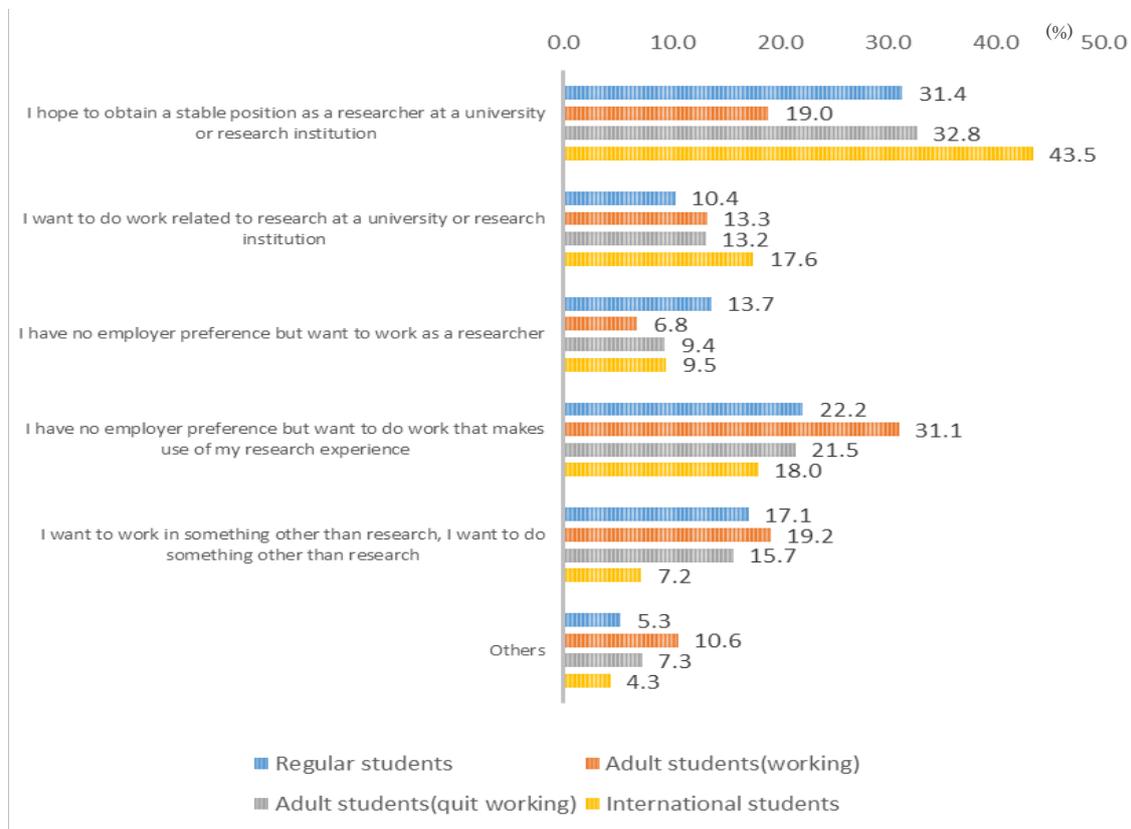
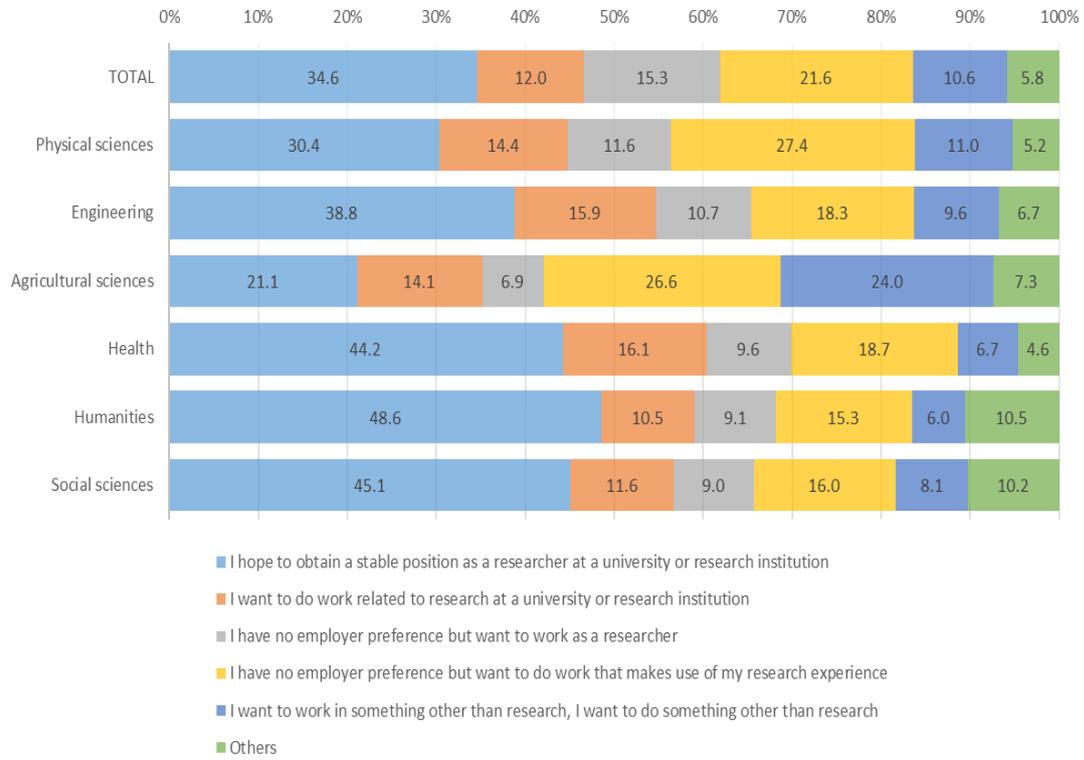


Figure 17-4. Future career prospects (according to discipline)



18. Effective measures to increase the number of students entering a doctoral course

When asked about effective measures to increase the number of students entering a doctoral course, the percentages of those who selected “the improvement of the research environment for young researchers” was the highest (24.7%), followed by “the stipends paid to doctoral students” (20.1%) and “the improvement of the treatment of doctoral degree holders, such as payment, in industry” (15.5%) (Figure 18-1). According to student category, the percentage of doctoral students who chose “the stipends paid to doctoral students” (27.6%) was higher than that who answered “the improvement in the research environment for young researchers” (24.3%). Thus, the percentage of doctoral students who wanted an increase in financial support in a doctoral course was high (Figure 18-2).

Figure 18-1. Effective measures to increase the number of students entering a doctoral course (overall)

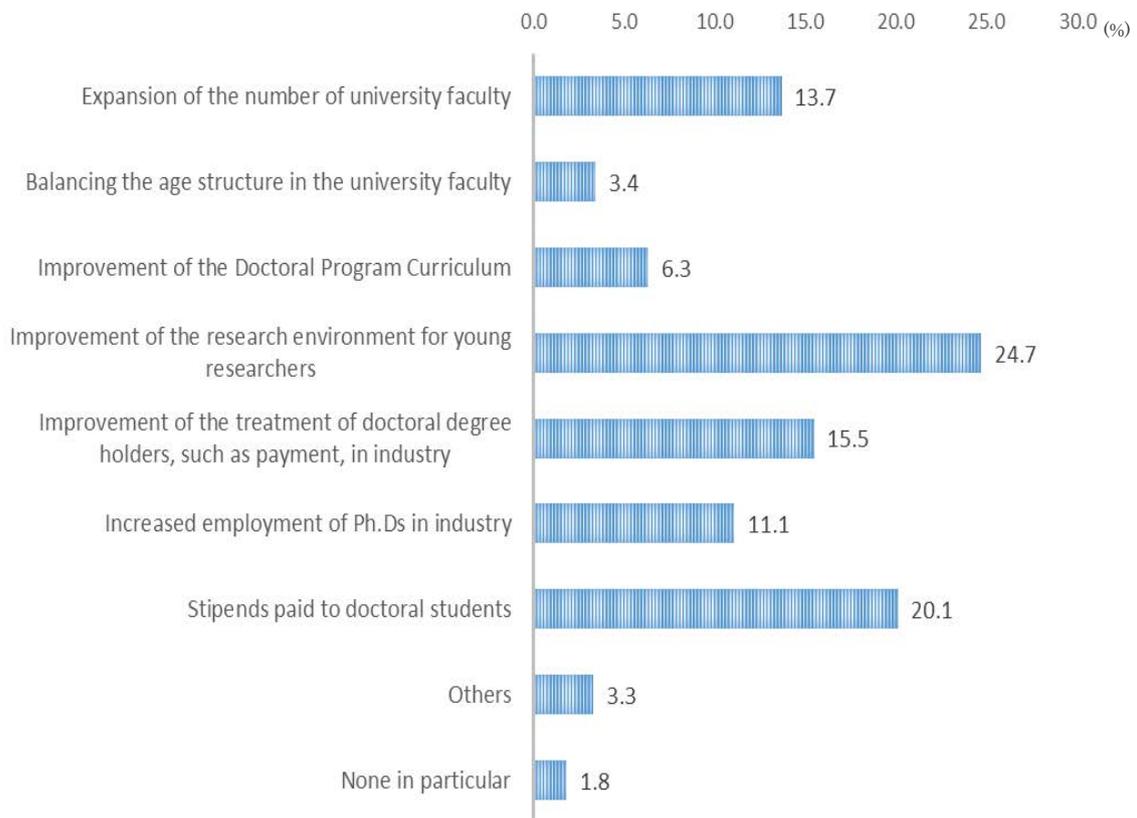
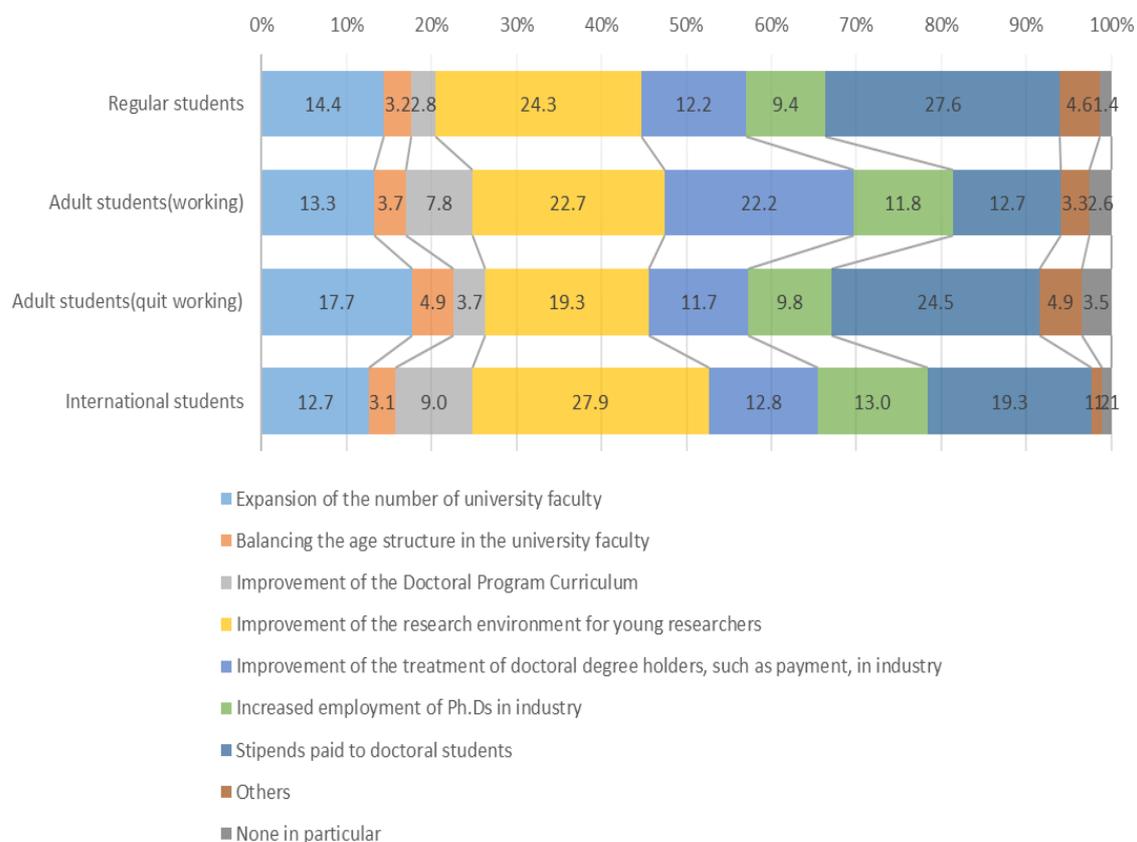


Figure 18-2. Effective measures to increase the number of students entering a doctoral course (according to student category)



Among the responses to the same question in an open-ended format, “the formulation (expansion) of an effective system for interest-free or non-returnable scholarships instead of accumulated debt for Japanese students,” “complete exemption from school expenses,” and “the stipends paid to graduate students, including master’s students” were found. Many responses also suggested ways to increase the number of students obtaining a doctoral degree and improving the treatment of doctoral degree holders in industry, such as “the optimization of employee training curricula in companies,” “the promotion of on-the-job employment in industry,” and “the encouragement of domestic industry by making use of highly skilled personnel.” In addition, when opinions were duplicated, a typical opinion was cited, and descriptions by which individuals and institutions might be identified were omitted.

<Open-response answers>

Requests for government and policies

- Encouragement of domestic industry by making use of highly skilled personnel
- Increases in stable financial resources, such as management expenses grants
- Allocate part of research funding to the incomes of university faculty members, similar to foreign countries

- Create financial resources for national universities by decreasing the number of private liberal arts universities and exterminating high-ranking government officials' landing lucrative posts in private companies
- Make the acquisition of a doctoral degree indispensable for appointing career-track positions for national civil servants. Before requesting various matters for industry, the national government should create a resolute attitude and policy.
- Positive recruitment and promotion of doctoral degree holders in central government ministries and agencies
- Expansion of career path guidance led by public institutions
- Abolishment of an age limit when raising research funding
- Increase in the number of doctoral degree holders in government offices
- Expansion of support for life events, such as childbirth and childcare
- System building while considering maternity leave acquisition at research positions and the effect of the acquisition on one's career
- Changeover from retrenchment finance, including the expansion of the national budget for universities
- When a corporate employee enrolls in a doctoral course, make the employee's school expenses subject to income tax deduction
- Abolish the target of a primary balance surplus
- Stop selection and concentration
- Teaching assistant, similar to graduate schools in the United States
- Do not lead science to policies
- Investment promotion in the field of research and development and the improvement of personnel mobility due to the reduction of posts in an age-limit system
- Support the coexistence between the lives of students, those who have completed master's and doctoral coursework, and young faculty members and their life plans
- Publicity of specific examples and opportunities for post-doctoral fellows' careers in industry
- Include those who have completed doctoral coursework in those who examine policies
- Provide research funding for young Ph.D. candidates
- Add publication incentives during doctoral course
- Arrange and provide financial assistance for attending a research laboratory abroad during doctoral course

Requests for industry

- Optimization of employee training curricula in companies
- Promotion of on-the-job employment in industry

- Increase in the value of in-company technology development in industry
- Dispatchment of a company's employees to doctoral courses
- Increase in the number of doctoral degree holders employed in their specialized areas
- Expansion of employing only doctoral degree holders
- A system in which working adults can returned to their previous careers while enrolling in a doctoral course for several years

Requests for universities and university education

- Responsible guidance by which students can acquire a doctoral degree in standard years
- School expenses support and curriculum improvement for students who have worked before beginning doctoral studies
- Universities' structure reinforcement to cope with research demands in industry
- Reinforcement of faculty members' education and management skills
- Participation of human resources working in the private sector by making use of a doctoral degree in the educational front
- Expansion of the opportunity for studying abroad
- Abolishment of graduate students' age discrimination
- Making foreign and domestic research activities a compulsory subject and increasing their support
- Making doctoral students' subscription for grant-in-aid for scientific research possible

Requests for financial support

- Scholarships that do not need to be paid back
- Complete exemption from school expenses
- Measures required for making school expenses free of charge and introducing a competitive research budget
- Scholarship repayment exemption + stipend payments during doctoral studies
- Expansion of a scholarship system by which people can restudy any time
- Increase in the number of students who can receive tuition exemptions
- Support doctoral students in the form of salary
- Nobody has enough confidence to enter master's and doctoral courses if they cannot foresee financial stability such as salary not only during master's and doctoral courses but also after completing these courses such as post-doctoral fellows.
- Post-doctoral fellows are in unstable forms of employment because no social security is provided for them. Financial and social securities should be improved for post-doctoral fellows.
- Support fellowship after graduation
- Provide full support to the students like tuition, research and other expenses

19. Open-ended responses

In this survey, a column was provided at the end of the questionnaire for students to record open-ended responses. Specific opinions from doctoral degree holders, which cannot be obtained from only aggregate results, were extracted to examine the current problems with doctoral coursework and summarized according to theme. Many opinions regarding the expansion of a financial support system and the improvement of the employment environment were found. Several opinions desired the correction of low-paid and unpaid duties, which conventionally remain in academia, including problems with unpaid doctors and part-time lecturers. These problems should be solved through the revision of the legal system in addition to policies concerning doctoral coursework. Based on the increased number of students who have worked before beginning doctoral studies, many opinions expected the government and industry to understand the situation of working adults who enter a doctoral course and to offer support to them. Many women requested the support for research interruption and reemployment in conjunction with life events, such as childbirth and childcare. In addition, when opinions were duplicated, a typical opinion was cited, and descriptions by which individuals and institutions might be identified were omitted.

<Problems with post-doctoral fellows>

- Before increasing the number of those who enter a doctoral course, I want the government to take measures to solve the current problem with post-doctoral fellows. If this problem is not solved, I think that negative images of post-doctoral fellows from the student's perspective, such as unstable employment after obtaining a doctoral degree and poor treatment when getting a job in a company, cannot be wiped out.
- Even if completing doctoral coursework, a stable job and income cannot be obtained at present. Therefore, I cannot continue research. I want the government to adopt a policy by which I will be able to have hope for the future for doing research.
- I heard that some post-doctoral fellows have committed suicide because of economic difficulties. I hope that this survey can be used to reduce the number of such people even a little.

<Doctoral degree holders who have worked before beginning doctoral studies>

- I was admitted to university as a working adult and entered graduate school. At that time, my school expenses were not supported at all. I hope that those who enter graduate schools will be supported financially.
- I think that it is important to support young students. However, because the number of students who have worked before beginning doctoral studies has increased, I think that supporting only young students is unfair.

- Although the Ministry of Education, Culture, Sports, Science, and Technology has promoted “lifelong learning” and “recurrent education,” the question items in this questionnaire were set based on “doctoral degree holders = the youth.” Therefore, this questionnaire is contradictory to the government policy.
- I entered a doctoral course after retiring from a company, and I have an opinion about DC1 and DC2 in the Japan Society for the Promotion of Science at present. I think that DC1 and DC2 are advantageous to those who have entered master’s and doctoral courses immediately after graduating from university and are not suitable for this increasingly diverse society.
- If there is a system in which working adults can receive compensation for absence from work after entering a doctoral course, they may be able to concentrate on research.

<Finding employment>

- Regarding the examination of those who apply for open call for university faculty members, I hope that the applicants are fairly examined only based on their abilities (regardless of alma mater, age, and personal relationship), similar to university general entrance examinations and the former national bar examination.
- Even if the number of fixed-term posts is increased, the lives of researchers may not be stabilized. I have many friends who have stopped working as researchers because of considering their families. I want the government to take necessary measures.
- In Japan, administrative agencies have not utilized doctoral human resources. I hope that the national government and municipalities take initiative to employ doctoral human resources instead of the private sector.

<Salary and treatment>

- When considering a doctoral course, students compare those who have gotten a job after completing a master’s degree and earned salaries and bonuses and gained employee benefits and welfare with doctoral degree holders who have performed research from morning to night at an annual income of 2.4 million yen. Although the starting salary of those who have completed a doctoral course seems to be high, this salary is not very high compared with the salary at the time three years after completing a master’s course. Therefore, the advantage of completing doctoral coursework is considered to be small.
- The salary of a person directly reflects “the evaluation of the person by its employer.” Even the special researcher system considers the value of “an excellent young researcher who takes part in future academic research” as “the annual income of 2.4 million yen.” The employment rate of researchers whose annual income is 2.4 million yen, which is equivalent to the annual income of those at the national poverty line, is only approximately 30%. Thus, those people are handled as if

they were in a privileged class. I think this situation is abnormal.

- I want that the government to establish an employment system by which the acquisition of a doctoral degree is not disadvantageous to getting a job. Expenses required for acquiring a doctoral degree and the current income are fully ill-balanced.
- Although research activities at universities or public research institutions require specialized knowledge, the salary of employees of companies, whose skill level is similar to that of researchers at universities or public research institutions, seems to be higher than that of these researchers. Moreover, an employment model for young researchers, whose employment period is five years, has been generalized, so young researchers have vague anxiety for the future.
- There were no questions about delivery and childcare in the questionnaire at all. When entering a doctoral course, those who are in the 20s spend their lives as students particularly in the humanities. When these students give birth during doctoral studies, the delivery becomes considerably disadvantageous to their career development. However, these students are not systematically supported.
- It is difficult for female doctoral degree holders to perform job hunting after childbirth. If they want to work, they cannot. If they want to change jobs, they are often refused. Basically, when a female doctoral degree holder reports pregnancy, her treatment and salary are decreased, and she cannot receive overtime pay. It is something like power harassment. When a female doctoral degree holder talks about job change, she may be harassed in the form of words, such as “because you have children, there is no place better than here.”

<Problems with unpaid doctors and part-time lecturers>

- If students at graduate schools of medicine and healthcare cannot earn a certain amount of income during doctoral studies appropriate for their ages and social standing, the number of students who enter doctoral courses will decrease. The salary of doctoral students by medical services at universities is almost equivalent to the salary of part-time jobs at drinking spots. Because of the medical services, they cannot find part-time healthcare jobs in other facilities. Therefore, their monthly salaries almost disappear due to their living expenses.
- I want the working conditions of part-time lecturers to be improved in the form of a national project. Specifically, the amount of money paid for one lecture unit should be increased. Only working as a part-time lecturer, I may starve to death as a matter of fact. It is quite useless to starve to death after receiving specialized education and acquiring a doctoral degree.
- I have been forced to work for a long time because my salary is too low. When I was in a doctoral course, I was an unpaid doctor. At present, I have no means of livelihood. Because many students have watched my life, the number of students to enter a doctoral course does not increase, and they do not feel the desire to enter a doctoral course.

- To earn an income sufficient to sustain my life, I have been a part-time lecturer at several schools. This situation may be often seen in the fields of social sciences. Matters other than lectures, such as understanding the educational system of each school, acquiring several applications for distance education, managing accounts, and preparing for lectures, take a lot of time. Therefore, I do not have enough time for research, and both my mind and body are eroded by these matters.
- At present, an extremely large number of postgraduates in medicine and healthcare are engaged in unpaid work other than research. Their working hours and duties are approximately several times those actually declared. I feel that these postgraduates are nothing else but labor forces.
- Putting postgraduates in medicine and healthcare to do unpaid work at clinical facilities must be stopped.

<Comparison with foreign countries>

- I think that the evaluation of doctoral degree holders by companies in Japan is considerably lower than that in Europe. The Japanese government should take an approach by which students are encouraged to enter a doctoral course and change students' consciousness.
- I think that the biggest problem is an extremely small number of employment opportunities for those who have completed a doctoral course. In the United States, in which I have been performing research, the acquisition of Ph.D. is absolutely advantageous to job hunting. Therefore, the number of those who want to enter a doctoral course seems to have increased year by year.
- After being engaged in research abroad, I think that training for those who want to be researchers (to improve language, presentation, and patent-related skills) and the acceptance of the latest technologies are insufficient in Japan. In the United States, the training of discussion and presentation skills start from universities and even younger ages. Therefore, I have been struggling to compete with these students in research.
- In Canada, the PharmD program is being spread, in which pharmacists research and learn clinical pharmacy more deeply at universities and present the results obtained through the research and learning at an academic conference or the like. In Japan, I think that the reinforcement of such a program in doctoral courses of pharmaceutical universities may be useful for universities and societies. Moreover, the completion of the reinforced program may become a new academic career.

20. Problems and prospects

In present society, in which science and technology have advanced, entering graduate schools to acquire knowledge and skills necessary for sophisticated tasks is indispensable for career development. In a survey conducted by the Organization for Economic Co-operation and Development (OECD), the average age of those who entered doctoral courses in OECD member countries was 30.9 years old in

2019. For doctoral students who have worked before beginning doctoral studies, it is considered common to enter doctoral courses after graduating from universities or completing master's courses. From 2014 when the first survey of the JD-Pro project was conducted until now, the percentage of students who worked before beginning doctoral studies has increased to more than 50%. The paradigm shift of the members of academia has quietly advanced on a large scale, which cannot be explained by the diversification of students.

The effect of the increased number of doctoral degree holders who worked before beginning doctoral studies was conspicuously exerted in the response results of this survey. For example, the percentages of regular employees and regular staff members in the 2018 cohort 1.5 years after completing doctoral coursework was higher than that of the 2012 cohort 1.5 years after completing doctoral coursework by approximately 7% (see Figure 9-11 in the Main Part). Regarding the annual income of doctoral degree holders 1.5 years after completing doctoral coursework, the percentage of high-income earners whose annual income exceeded 8 million yen was more than 20% (see Figure 10-3 in the Main Part). However, these changes are not because of improvement in the employment environment of doctoral students but because of the increased percentage of students who worked before beginning and during doctoral studies. Consequently, the apparent employment situation and annual income were improved. There is a limitation in current panel surveys to examine these changes. Therefore, in the future, the basic design of follow-up surveys must be revised to take into consideration the changes in the attribution of students and their component ratio.

In the future, university services and government policies will be asked to adjust to these changes. Until now, university services and government policies have been designed centering on conventional students who directly enter doctoral courses from master's courses. A comprehensive institutional design assuming those who aim to acquire a doctoral degree while working has not advanced. To remove current gaps among systems for doctoral studies, it is necessary to encourage universities and industry to promote an approach to fostering excellent intellectuals.

Regarding the changes in the members of academia, the presence of female researchers in academia has been changing little by little. In this survey, the results obtained by male researchers were almost similar to those obtained by female researchers in several items, such as role in current research (see Figure 16-7 in the Main Part). However, the differences in the annual income or similar items between male and female researchers have not been dissolved, so the employment status, salary, and treatment, including promotion and salary raise, of female researchers must be improved further (see Figure 11-2 in the Main Part).

Problems with unpaid doctors and low-paid work of part-time lecturers in medicine and health care, which were pointed out several times in open-ended responses in this survey, are very important, so the problems cannot be accepted simply as traditional conventions. The trend that many master's students avoid entering a doctoral course has been covered widely in the media, and so on. The attitude

of universities not to correct employment practices toward doctoral students, including severe low-paid work, may be one of the reasons for widening the distance between students and academia. At present, the Ministry of Education, Culture, Sports, Science, and Technology has been expanding measures to economically support doctoral students. However, this survey reveals that these measures are insufficient to fundamentally solving problems with unpaid doctors and low-paid work of part-time lecturers.

Finally, the problems with this survey and future prospects are examined. The JD-Pro project was launched in 2014. Regarding the subjects of the first survey (the 2012 cohort), approximately 10 years have passed since the graduation. Therefore, the number of traceable doctoral human resources has decreased as the survey repeated, and statistically significant samples have been difficult to collect. In particular, the number of traceable doctoral human resources who obtained jobs in private companies has decreased as the survey repeated. The original goal of this survey has been difficult to attain, which is “to realize various career paths of doctoral human resources, objective data are collected to provide evidence for the policy’s development.” There are various problems with the methods of this survey. In the methods, busy doctoral human resources are asked to answer a large number of time-consuming questions at each survey. In the future, to avoid continuously placing an excessive burden onto the subjects, who participate in this survey using their precious time, and to realize the simplification and speedup of input operations, we will examine cooperation with other systems and redesign survey methods.

Acknowledgments

We are sincerely grateful to those who answered questions in the questionnaire, university personnel who participated in this survey, and persons in various bodies, including public research institutes and private companies. Based on their substantial cooperation and assistance, this report could be published without any trouble. Thank you very much again.

To repay those who participated in this survey, we sincerely hope that this report is effectively used by policy makers to draw up science, technology, and innovation plans and to execute various measures related to the plans. All of us will continuously endeavor to perform various research and studies concerning doctoral human resources and similar resources, so we would like to take this opportunity to express our feelings of gratitude for your continuous cooperation.

Reference materials

Reference material : Questionnaire (the 2018 cohort 1.5 years after completing doctoral coursework)

Japan Doctoral Human Resource Profiling (JD-Pro)

1.5 years after the completion of doctorate course in FY2020



***** Purpose of this survey *****

Young researchers play an important role in science and technology innovation. However, the difficult environment that such researchers face, such as a shortage of stable positions and lack of diversity in the career path, is one of the causes behind the decline in the rate of enrollment in doctoral courses, as well as a factor that makes the occupation of a researcher seem less attractive. In light of this situation, there is a need to put in place support measures to radically improve the appeal and situation for young researchers, such as improving the treatment of students in graduate schools, and enhancing diverse career paths and flows including industries for graduate school leavers. This can be achieved by continuously capturing and understanding information on the changes to the status of graduate school leavers in society.

To that end, the National Institute of Science and Technology Policy (NISTEP) implements the Japan Doctoral Human Resource Profiling (JD-Pro) survey with the aim of enhancing the transparency of career paths for doctoral human resources, and establishing objective evidence for the purpose of realizing policymaking based on such evidence.

This survey is conducted on all students who completed (including those who completed the course without receiving their doctoral degree) their doctoral course in FY2018 (April 1, 2018 - March 31, 2019). It aims to continuously capture information and gain insight into the impact that their financial situation as well as education and research experiences during their doctoral courses have on the decision-making process for their future path after the course, career development, research and life, and other areas.

All possible measures have been taken to make taking the survey easier and to protect personal information, so we would appreciate your continued cooperation. The results of this survey will be published as a report and posted on NISTEP's website.

- If you have any comments about this survey, please fill in at the end.
- Please return the survey by Monday, December 14.

Next

Note

Do not use your browser's Back button while answering the survey.
You may not stay in one page for more than 60 minutes.
JavaScript and your Cookies settings must be enabled.

-----<改ページ>-----

Q1	Please read the following description of this survey and click the "Agree" button to indicate your acknowledgement of the terms of privacy policy and then proceed to this survey. If you do not agree to them please click the "Disagree" button and exit this survey.
-----------	--

About the Survey:
Sustainable development of science and technology research needs young generations. However, they have faced lack of stable positions and clear carrier path. That have caused declining doctoral course enrollments and less attractive research carriers. This survey conducted by NISTEP aims to contribute evidenced policy making; economic support in graduate course, promoting tenure positions and making diverse recruitments.

Response Unit:
all students who are graduating from Doctoral course in FY2018 (April 1, 2018 - March 31, 2019).

Results of the survey:
Results of the survey can be found on the NISTEP's web site at <https://www.nistep.go.jp>.

*The information you provide will be used for statistical purpose only.
*All information provided in this questionnaire complete confidentiality will be provided.

Under the the act on the protection of personal information held by administrative organs of 2003, your responses will

be kept confidential.

(National Institute of Science and Technology Policy
Ministry of Education, Culture, Sports, Science and Technology)

Agree

Disagree

-----<改ページ>-----

【終了(END2)】

This is the end of the survey. Thank you for your time.

【条件】

Q1の選択肢『2.Disagree』を選択した

-----<改ページ>-----

Q2 Please provide your name in Japanese or in English.

Name (Japanese)

Family name:

First name:

Name (English)

First name:

Middle name:

Family name:

-----<改ページ>-----

**Q3 Please indicate your sex.
(Mark one answer.)**

Male

Female

-----<改ページ>-----

**Q4 Which year were you born in? (Based on the Western calendar)
(Input your answer in single-byte characters.)**

Year:

-----<改ページ>-----

Q5

Please select your nationality/region.
(Mark one answer.)

Japan

North/Central/South America

United States

Canada

Brazil

Europe

France

Russia

Germany

United Kingdom

Asia

China

Taiwan

Republic of Korea

Thailand

Indonesia

Vietnam

Bangladesh

Malaysia

India

Oceania

Australia

Africa

Egypt

Kenya

Other

Name of country:

-----<改ページ>-----

Q6

In which country do you currently live?
(Mark one answer.)

Japan

North/Central/South America

United States

Canada

Brazil

Europe

France

Russia

Germany

United Kingdom

Asia

China

Taiwan

Republic of Korea

Thailand

Indonesia

Vietnam

Bangladesh

Malaysia

India

Oceania

Australia

Africa

Egypt

Kenya

Other

Name of country:

-----<改ページ>-----

【条件】
Q6の選択肢『1.Japan』を選択した

Q7 Which prefecture do you currently live in?
(Mark one answer.)

Hokkaido

Ishikawa

Okayama

Aomori

Fukui

Hiroshima

Iwate

Yamanashi

Yamaguchi

Miyagi

Nagano

Tokushima

Akita

Gifu

Kagawa

Yamagata

Shizuoka

Ehime

Fukushima

Aichi

Kochi

Ibaraki

Mie

Fukuoka

- | | | |
|--------------------------------|--------------------------------|---------------------------------|
| <input type="radio"/> Tochigi | <input type="radio"/> Shiga | <input type="radio"/> Saga |
| <input type="radio"/> Gunma | <input type="radio"/> Kyoto | <input type="radio"/> Nagasaki |
| <input type="radio"/> Saitama | <input type="radio"/> Osaka | <input type="radio"/> Kumamoto |
| <input type="radio"/> Chiba | <input type="radio"/> Hyogo | <input type="radio"/> Oita |
| <input type="radio"/> Tokyo | <input type="radio"/> Nara | <input type="radio"/> Miyazaki |
| <input type="radio"/> Kanagawa | <input type="radio"/> Wakayama | <input type="radio"/> Kagoshima |
| <input type="radio"/> Niigata | <input type="radio"/> Tottori | <input type="radio"/> Okinawa |
| <input type="radio"/> Toyama | <input type="radio"/> Shimane | |

-----<改ページ>-----

Q8	<p>Please provide the e-mail address that you use most frequently, and which you can be reached at in the future. (Input your answer in single-byte characters.)</p> <p>*Please provide an e-mail address that you can be reached at even if there are any changes in the institution you are affiliated with.</p>
-----------	--

E-mail address:

Please re-enter your e-mail address for verification.

E-mail address:

-----<改ページ>-----

Q9	<p>Please select the type of graduate school (doctoral course) where you completed your doctoral course. (Mark one answer.)</p>
-----------	--

- National
- Public
- Private

-----<改ページ>-----

Q10	<p>Please select the graduate school (doctoral course) where you completed your doctoral course. (Mark one answer.)</p> <p>*If the graduate school you completed is not listed, please enter it directly in the for "Other university".</p>
------------	---

- | | | |
|--|--|--|
| <input type="radio"/> Hokkaido University | <input type="radio"/> Kyushu University | <input type="radio"/> Hiroshima City University |
| <input type="radio"/> Muroran Institute of Technology | <input type="radio"/> Kyushu Institute of Technology | <input type="radio"/> Yamaguchi Prefectural University |
| <input type="radio"/> Otaru University of Commerce | <input type="radio"/> Saga University | <input type="radio"/> Tokyo University of Science,
Yamaguchi |
| <input type="radio"/> Obihiro University of Agriculture and
Veterinary Medicine | <input type="radio"/> Nagasaki University | <input type="radio"/> Kagawa Prefectural College of Health
Sciences |
| <input type="radio"/> Asahikawa Medical University | <input type="radio"/> Kumamoto University | <input type="radio"/> University of Kochi |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |

<input type="checkbox"/> Kitami Institute of Technology	<input type="checkbox"/> Oita University	<input type="checkbox"/> Kochi University of Technology
<input type="checkbox"/> Hirosaki University	<input type="checkbox"/> University of Miyazaki	<input type="checkbox"/> The University of Kitakyushu
<input type="checkbox"/> Iwate University	<input type="checkbox"/> Kagoshima University	<input type="checkbox"/> Kyushu Dental University
<input type="checkbox"/> Tohoku University	<input type="checkbox"/> National Institute of Fitness and Sports in Kanoya	<input type="checkbox"/> Fukuoka Women's University
<input type="checkbox"/> Akita University	<input type="checkbox"/> University of the Ryukyus	<input type="checkbox"/> University of Nagasaki
<input type="checkbox"/> Yamagata University	<input type="checkbox"/> National Graduate Institute for Policy Studies	<input type="checkbox"/> Prefectural University of Kumamoto
<input type="checkbox"/> Fukushima University	<input type="checkbox"/> The Graduate University for Advanced Studies	<input type="checkbox"/> Oita University of Nursing and Health Sciences
<input type="checkbox"/> Ibaraki University	<input type="checkbox"/> Japan Advanced Institute of Science and Technology	<input type="checkbox"/> Miyazaki Prefectural Nursing University
<input type="checkbox"/> University of Tsukuba	<input type="checkbox"/> Nara Institute of Science and Technology	<input type="checkbox"/> Okinawa Prefectural College of Nursing
<input type="checkbox"/> Utsunomiya University	<input type="checkbox"/> FUTURE UNIVERSITY-HAKODATE	<input type="checkbox"/> Okinawa Prefectural University of Arts
<input type="checkbox"/> Gunma University	<input type="checkbox"/> Sapporo Medical University	<input type="checkbox"/> Aichi Medical University
<input type="checkbox"/> Saitama University	<input type="checkbox"/> Sapporo City University	<input type="checkbox"/> Aichi Gakuin University
<input type="checkbox"/> Chiba University	<input type="checkbox"/> Chitose Institute of Science and Technology	<input type="checkbox"/> Aoyama Gakuin University
<input type="checkbox"/> The University of Tokyo	<input type="checkbox"/> Aomori University of Health and Welfare	<input type="checkbox"/> Azabu University
<input type="checkbox"/> Tokyo Medical and Dental University	<input type="checkbox"/> Aomori Public College	<input type="checkbox"/> Iwate Medical University
<input type="checkbox"/> Tokyo University of Foreign Studies	<input type="checkbox"/> Iwate Prefectural University	<input type="checkbox"/> Osaka Medical College
<input type="checkbox"/> Tokyo Gakugei University	<input type="checkbox"/> Miyagi University	<input type="checkbox"/> Gakushuin University
<input type="checkbox"/> Tokyo University of Agriculture and Technology	<input type="checkbox"/> Akita Prefectural University	<input type="checkbox"/> Kansai University
<input type="checkbox"/> Tokyo University of the Arts	<input type="checkbox"/> Yamagata Prefectural University of Health Science	<input type="checkbox"/> Kansai Medical University
<input type="checkbox"/> Tokyo Institute of Technology	<input type="checkbox"/> The University of Aizu	<input type="checkbox"/> Kwansei Gakuin University
<input type="checkbox"/> Tokyo University of Marine Science and Technology	<input type="checkbox"/> Fukushima Medical University	<input type="checkbox"/> Kitasato University
<input type="checkbox"/> Ochanomizu University	<input type="checkbox"/> Ibaraki Prefectural University of Health Sciences	<input type="checkbox"/> Kyoto Women's University
<input type="checkbox"/> The University of Electro-Communications	<input type="checkbox"/> Gunma Prefectural College of Health Sciences	<input type="checkbox"/> Kindai University
<input type="checkbox"/> Hitotsubashi University	<input type="checkbox"/> Takasaki City University of Economics	<input type="checkbox"/> Kurume University
<input type="checkbox"/> Yokohama National University	<input type="checkbox"/> Maebashi Institute of Technology	<input type="checkbox"/> Keio University
<input type="checkbox"/> Niigata University	<input type="checkbox"/> Saitama Prefectural University	<input type="checkbox"/> Kokugakuin University
<input type="checkbox"/> Nagaoka University of Technology	<input type="checkbox"/> Tokyo Metropolitan University	<input type="checkbox"/> International University of Health and Welfare
<input type="checkbox"/> University of Toyama	<input type="checkbox"/> Kanagawa University of Human Services	<input type="checkbox"/> Komazawa University
<input type="checkbox"/> Kanazawa University	<input type="checkbox"/> Yokohama City University	<input type="checkbox"/> University of Occupational and Environmental Health
<input type="checkbox"/> University of Fukui	<input type="checkbox"/> Nagaoka Institute of Design	<input type="checkbox"/> Jichi Medical University
<input type="checkbox"/> University of Yamanashi	<input type="checkbox"/> Niigata College of Nursing	<input type="checkbox"/> Juntendo University
<input type="checkbox"/> Shinshu University	<input type="checkbox"/> Toyama Prefectural University	<input type="checkbox"/> Showa University
<input type="checkbox"/> Gifu University	<input type="checkbox"/> Ishikawa Prefectural University	<input type="checkbox"/> St. Marianna University School of Medicine

<input type="checkbox"/> Shizuoka University	<input type="checkbox"/> Ishikawa Prefectural Nursing University	<input type="checkbox"/> Taisho University
<input type="checkbox"/> Hamamatsu University School of Medicine	<input type="checkbox"/> Kanazawa college of Art	<input type="checkbox"/> Chukyo University
<input type="checkbox"/> Nagoya University	<input type="checkbox"/> Fukui Prefectural University	<input type="checkbox"/> Teikyo University
<input type="checkbox"/> Aichi University of Education	<input type="checkbox"/> Nagano College of Nursing	<input type="checkbox"/> TOKAI UNIVERSITY
<input type="checkbox"/> Nagoya Institute of Technology	<input type="checkbox"/> Suwa University of Science	<input type="checkbox"/> Jikei University
<input type="checkbox"/> Toyohashi University of Technology	<input type="checkbox"/> Gifu College of Nursing	<input type="checkbox"/> Tokyo Women's Medical University
<input type="checkbox"/> Mie University	<input type="checkbox"/> Gifu Pharmaceutical University	<input type="checkbox"/> Tokyo Denki University
<input type="checkbox"/> Shiga University	<input type="checkbox"/> University of Shizuoka	<input type="checkbox"/> Tokyo University of Agriculture
<input type="checkbox"/> Shiga University of Medical Science	<input type="checkbox"/> Aichi Prefectural University	<input type="checkbox"/> Tokyo University of Science
<input type="checkbox"/> Kyoto University	<input type="checkbox"/> Aichi Prefectural University of Fine Arts and Music	<input type="checkbox"/> Doshisha University
<input type="checkbox"/> Kyoto Institute of Technology	<input type="checkbox"/> Nagoya City University	<input type="checkbox"/> Toho University
<input type="checkbox"/> Osaka University	<input type="checkbox"/> The University of Shiga Prefecture	<input type="checkbox"/> Tohoku Gakuin University
<input type="checkbox"/> Hyogo University of Teacher Education	<input type="checkbox"/> Kyoto City University of Arts	<input type="checkbox"/> Toyo University
<input type="checkbox"/> Kobe University	<input type="checkbox"/> Kyoto Prefectural University	<input type="checkbox"/> Nippon Medical School
<input type="checkbox"/> Nara Women's University	<input type="checkbox"/> Kyoto Prefectural University of Medicine	<input type="checkbox"/> Japan Women's University
<input type="checkbox"/> Wakayama University	<input type="checkbox"/> Osaka City University	<input type="checkbox"/> Nihon University
<input type="checkbox"/> Tottori University	<input type="checkbox"/> Osaka Prefecture University	<input type="checkbox"/> Fukuoka University
<input type="checkbox"/> Shimane University	<input type="checkbox"/> Kobe City University of Foreign Studies	<input type="checkbox"/> Fujita Health University
<input type="checkbox"/> Okayama University	<input type="checkbox"/> Kobe City College of Nursing	<input type="checkbox"/> Bukkyo University
<input type="checkbox"/> Hiroshima University	<input type="checkbox"/> University of Hyogo	<input type="checkbox"/> Hosei University
<input type="checkbox"/> Yamaguchi University	<input type="checkbox"/> Nara Medical University	<input type="checkbox"/> Meiji University
<input type="checkbox"/> Tokushima University	<input type="checkbox"/> Wakayama Medical University	<input type="checkbox"/> Ritsumeikan University
<input type="checkbox"/> Kagawa University	<input type="checkbox"/> The University of Shimane	<input type="checkbox"/> Ryukoku University
<input type="checkbox"/> Ehime University	<input type="checkbox"/> Okayama Prefectural University	<input type="checkbox"/> Waseda University
<input type="checkbox"/> Kochi University	<input type="checkbox"/> Prefectural University of Hiroshima	<input type="checkbox"/> Other university Name of institution: <input type="text"/>

-----<改ページ>-----

Q11	Please fill in the graduate course (doctoral course) that you have completed.
------------	--

Graduate course:

-----<改ページ>-----

Q12	Did you stay in the same university (graduate school) from the undergraduate course to the doctoral course? (Mark all applicable answers.)
------------	---

I stayed in the same university (graduate school) from the undergraduate course to the doctoral course

I went to a different university (graduate school) when I advanced from master's to doctoral course

I went to a different university (graduate school) when I advanced from undergraduate to master's course

-----<改ページ>-----

Q13

**Please select from the list below the field that is closest to your field of research in your doctoral course.
(Mark one answer.)**

Physical science

Mathematics

Biology

Information science

Earth sciences

Physics

Other Physical science (including unclassifiable)

Chemistry

Engineering

Mechanical/Marine

Material

Electrical/Communications

Textile

Civil/Architecture

Aeronautical

Applied chemical

Management

Applied science

Other Engineering (including unclassifiable)

Nuclear

Agricultural sciences

Agricultural science

Forestry

Agrochemistry

Veterinary/Animal Science

Agricultural engineering

Fisheries science

Agricultural economics

Other Agricultural sciences (including unclassifiable)

Forest science

Health

Medicine

Nursing

Dentistry

Other Health (including unclassifiable)

Pharmaceutical science

Humanities

Literature

Philosophy

History

Other Humanities (including unclassifiable)

Social sciences

Law/Political science

Sociology

Commercial science/Economics

Other Social sciences (including unclassifiable)

Other

<input type="radio"/> Psychology	<input type="radio"/> Education
<input type="radio"/> Home economics	<input type="radio"/> Art/Other

Unknown

Unknown

-----<改ページ>-----

Q14	From when to when were you enrolled in a graduate school doctoral course that you completed in FY 2018? (Input your answer in single-byte characters.)
------------	---

Enrollment year
 month

Completion year
 month

-----<改ページ>-----

Q15	Do you currently hold a Ph.D. (course-based or dissertation-based doctoral programs)? (Mark one answer.)
------------	---

Yes (course-based doctoral program)

Yes (dissertation-based doctoral program)

No

-----<改ページ>-----

【条件】 Q15の選択肢『1.Yes (course-based...』、『2.Yes (dissertation...』の中でいずれかを選択した

Q16	Please enter the date you received a doctoral degree. (Input your answer in single-byte characters.)
------------	---

year
 month

-----<改ページ>-----

Q17

**On the average, how many hours of research work do you do per weekday during your doctoral course? Please select the most applicable answer.
(Mark one answer.)**

- Less than one hour
- 1 hour or more - Less than 3 hours
- 3 hours or more - Less than 5 hours
- 5 hours or more - Less than 8 hours
- 8 hours or more - Less than 12 hours
- 12 hours or more - Less than 15 hours
- 15 hours or more

-----<改ページ>-----

Q18

**Before you enrolled in your doctoral course, did you have experience living as a non-student working adult?
(Mark one answer.)**

*** Experience living as a non-student working adult means work experience separate from educational institutions and working regular hours for a salary.**

- Yes
- No

-----<改ページ>-----

【条件】

Q18の選択肢『1.Yes』を選択した

Q19

**While enrolled in your doctoral course, did you continue that job?
(Mark one answer.)**

- Remained in that employment
- Was on leave from that employment
- Left that employment
- None of the above

-----<改ページ>-----

【条件】

Q18の選択肢『1.Yes』を選択した

Q20

**Please select the answer that best applies to the management organization of your employer in the main job that you held before enrolling in the doctoral course.
(Mark one answer.)**

- University, etc.

- Public research institution
- Private-sector corporation
- Non-profit organization (including schools, administrative agencies, etc.)
- Sole proprietor
- Other/Independent

-----<改ページ>-----

【条件】
Q18の選択肢『1.Yes』を選択した

Q21 **Has acquiring a Ph.D. (or completing a doctoral course) had any impact on your current job?**
(Mark all applicable answers.)

- I was able to get a new job
- It has (or is expected to) lead to promotions and salary increments
- I am more trusted at work
- It has expanded the scope of my work
- I am engaged in more international activities
- Other Specifically:
- No particular impact

-----<改ページ>-----

Q22 **While enrolled in your doctoral course, were you accepted as a Research Fellow of the Japan Society for the Promotion of Science(JSPS)?**
(Mark one answer.)

- Did not apply
- Applied but was not accepted
- Accepted as DC1
- Accepted as DC2

-----<改ページ>-----

Q23 **At the time you completed your doctoral course, what was the total amount of any grants/loans requiring repayment? If you had any loans remaining from your bachelor's or master's courses, please include them in your total.**
(Input your answer in single-byte characters.)
Enter "0" if you had no grants/loans to repay.

Total amount: 0,000 yen

-----<改ページ>-----

Q24

Did you receive a tuition exemption for your doctoral course?
(Mark one answer.)

- No exemption
- Partial exemption
- Full exemption
- Don't remember/don't know

-----<改ページ>-----

【条件】

Q24の選択肢『2.Partial exemption』、『3.Full exemption』の中でいずれかを選択した



Q25

Please answer with the total amount of the tuition exemption per year for your doctoral course.
(Input your answer in single-byte characters.)

0,000 yen per year

-----<改ページ>-----

Q26

Why did you move on to a doctoral course? Please select all answers that apply.
(Mark all applicable answers.)

- There was a topic or problem I wanted to research
- I was interested in research itself
- I was interested in improving my own skills and abilities
- It was necessary in order to become a professor or researcher
- I obtained a fellowship, etc.
- My employer recommended or required the degree
- With a doctoral degree, I can expect a good job or a good income
- A senior I respected or someone I wanted to become continued their studies
- A parent or advisor recommended it
- I wanted to be a student or I had to be a student
- Other Specifically:

-----<改ページ>-----

Q27

From enrollment in your doctoral course to the present, have you done any internships?
(Mark one answer.)

- Yes
- No

-----<改ページ>-----

【条件】

Q27の選択肢『1.Yes』を選択した

Q28

**What kind of organization was your internship?
(Mark one answer.)**

***If you participated in more than one internship program, please answer with reference to the longest internship program.**

- University, etc.
- Public research institution
- Private-sector corporation
- Non-profit organization (including schools, administrative agencies, etc.)
- Sole proprietor
- Other/Independent

-----<改ページ>-----

【条件】

Q27の選択肢『1.Yes』を選択した

Q29

**What made you choose your internship? Please select all that apply.
(Mark all applicable answers.)**

***If you participated in more than one internship program, please answer with reference to the longest internship program.**

- I thought it would be beneficial even though I was to be employed at that company or university, etc.
- I was interested in it as future work or employment
- I felt that it would be interesting
- The commute was easy
- I was attracted by the fact I would be remunerated
- It was recommended by an academic advisor, senior, parent, etc.
- Other Specifically:

-----<改ページ>-----

【条件】

Q27の選択肢『1.Yes』を選択した

Q30

**What was the duration of your internship?
(Mark one answer.)**

***If you participated in more than one internship program, please answer with reference to the longest internship program.**

- 1 day to less than 1 week
- 1 week to less than 1 month
- 1 month to less than 3 months
-

3 months to less than 6 months

6 months to less than 1 year

1 year or more

-----<改ページ>-----

【条件】

Q27の選択肢『1.Yes』を選択した

Q31

Was it a paid internship?
(Mark one answer.)

***If you participated in more than one internship program, please answer with reference to the longest internship program.**

Unpaid

Reimbursement of costs (transportation, lunch, accommodation, etc.)

Paid (daily) salary Specific amount [Per day]:yen

yen

Paid (hourly) salary Specific amount [Per hour]:yen

yen

Paid salary (Other) Describe the specific compensation and amount, etc.:

-----<改ページ>-----

【条件】

Q31の選択肢『4.Paid (hourly) sal...』を選択した

Q31_2

Please indicate the average number of hours per day of internship you have done.

***If you participated in more than one internship program, please answer with reference to the longest internship program.**

Average number of hours: per day

-----<改ページ>-----

【条件】

Q27の選択肢『1.Yes』を選択した

Q32

What were the main contents of your internship program?
(Mark one answer.)

***If you participated in more than one internship program, please answer with reference to the longest internship program.**

Research and development work at the internship organization (research internship)

Work other than research and development at the internship organization

Providing work support, explanations, or study tours at the internship organization

Other Specifically:

-----<改ページ>-----

【条件】
Q27の選択肢『1.Yes』を選択した

Q33 Did you get a job at your internship organization?
(Mark one answer.)

- Yes
- No

-----<改ページ>-----

【条件】
Q33の選択肢『2.No』を選択した

Q34 Why did you not get a job at your internship organization?
(Mark all applicable answers.)

- I did not want to work there to begin with
- I got a job at a different company in the same industry as my internship organization
- I wanted to work in the organization before the internship, but changed my mind as I felt that I would not be able to apply my research contents to the job
- I wanted to work in the organization before the internship, but changed my mind as I felt that I would not be able to apply my research skills to the job
- I wanted to work in the organization before the internship, but changed my mind when considering my career path, as I felt that I would not be able to enhance my value
- I wanted to work in the organization before the internship, but changed my mind as I felt that the compensation/benefits were not satisfactory
- I wanted to work in the organization before the internship, but changed my mind as the atmosphere and corporate culture did not appeal to me
- I wanted to work in the organization before the internship, but changed my mind as I felt that participating in the internship was not an incentive for getting a job in the organization
- I didn't get hired
- Other Specifically:

-----<改ページ>-----

【条件】
Q27の選択肢『2.No』を選択した

Q35 Why did you not participate in an internship?
(Mark all applicable answers.)

- There were no themes, etc. that I wanted to participate in
- I was busy with research and it was difficult to apply
- I was not interested
- I applied but was not selected
-
-

Other Specifically:

-----<改ページ>-----

Q36

While enrolled in graduate school (Master's - Doctorate degree), did you spend more than 3 months at a research laboratory abroad?

(Mark one answer.)

*** If you spent time at multiple laboratories, enter the combined time spent at the labs.**

Yes

No

-----<改ページ>-----

【条件】

Q36の選択肢『1.Yes』を選択した

Q36_2

Please enter the duration you spent at a research laboratory abroad.

*** If you spent time at multiple laboratories, enter the combined time spent at the labs.**

Period:

years

months

-----<改ページ>-----

Q37

While enrolled in your doctorate course, were you a member of the Program for Leading Graduate Schools?

(Mark one answer.)

* The Program for Leading Graduate Schools is a national project started in fiscal 2011 to foster excellent students who are highly creative and look at the big picture and who will play leading roles globally. This project builds and develops advanced academic programs that go beyond the boundaries of specialization through collaboration between the academic, industrial and governmental sectors.

I received support from the Program for Leading Graduate Schools

I did not receive support from the Program for Leading Graduate Schools

I do not know if I received support from the Program for Leading Graduate Schools

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Q37_2

While enrolled in your doctorate course, were you a member of the WISE Program(Doctoral Program for World-leading Innovative & Smart Education)?

(Mark one answer.)

*The WISE Program (Doctoral Program for World-leading Innovative & Smart Education) is a government program implemented from FY2018, with the goal of nurturing doctorate personnel (advanced, knowledgeable professionals) who can take on the challenge of solving societal issues and bring innovation to society, as well as lead the creation and utilization of new knowledge and create values that will drive the next generation.

- I received support from the WISE Program
- I did not receive support from the WISE Program
- I do not know if I received support from the WISE Program

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Q38

How did you feel about the academic/research guidance and other programs (including program for Leading Graduate Schools, WISE program, etc.) while enrolled in your doctoral course? (Mark one answer for each.)

1/5

Quality of academic/research guidance

- Very good
- Good
- Neither good nor bad
- Not very good
- Poor

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Please tell us about your employment status.

Q39

Which one of the following best describes your working for pay or profit? Please select the most applicable answer. Working includes being self-employed, or family businesses (such as a store managed on your own, farming), side jobs, and part-time jobs. (Mark one answer.)

- Mostly working
- Working on the side while attending school
- Working on the side while homemaking
- On leave from work (On childcare leave, etc.)
- Looking for work
- Attending school
- Homemaking, parenting, etc.
- Other (Elderly, etc.)

【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q40 Which one of the following best describes the principle job? If you are on leave from work, please answer regarding the situation immediately before your leave began.
(Mark one answer.)

- Management government official
- Officers of companies and organizations
- Management staff of companies and organizations
- Other administrative and managerial workers
- Natural science researchers
- Humanities, social science, and other researchers
- Agriculture, forestry, and fishery engineers
- Manufacturing engineers (development)
- Manufacturing engineers (except development)
- Architects, civil engineers and surveyors
- Data processing and communication engineers (system administrator, Communication network engineers)
- Doctors
- Dental surgeons
- Veterinary surgeons
- Pharmacists
- Public health nurses, midwives, nurses
- Medical technicians (diagnostic radiographers, physiotherapists, dental hygienists, nutritionists, acupuncturists, etc.)
- Social welfare specialist professionals (childcare workers, welfare counseling guidance professionals, etc.)
- Legal workers (judges, attorneys, judicial scriveners etc.)
- Management, finance, and insurance professionals (certified public accountants, licensed tax accountants, certified social insurance and labor consultant, etc.)
- Management/business consultants
- Schoolteacher (kindergarten) including schools for students with special needs
- Schoolteacher (elementary/junior high school) including schools for students with special needs
- Schoolteacher (high school) including schools for students with special needs
- Schoolteacher (technical college, junior college)
- Schoolteacher (university, graduate school)
- Other type of teacher
- Workers in religion
- Authors, journalists, editors
- Artists, designers, photographers, film operators
- Musicians, performers, actors, etc.
- Other specialist professionals (librarians, curators, counselors, etc.)
- General clerical workers (general affairs workers, human affairs workers, receptionists secretaries)
- Accountancy clerks (accountants business clerks etc.)
- Production-related clerical workers
- Sales clerks

<input type="radio"/> Outdoor service workers (money collectors, investigators)
<input type="radio"/> Transport and post clerical workers
<input type="radio"/> Office equipment operators
<input type="radio"/> Merchandise sales, sales, and other sales-related workers (retailers, shop assistants, etc.)
<input type="radio"/> Domestic support service workers, care service workers
<input type="radio"/> Healthcare service workers, domestic hygiene service workers
<input type="radio"/> Food and drink preparatory workers, customer service workers
<input type="radio"/> Residential facilities, office buildings and other management personnel
<input type="radio"/> Other service workers
<input type="radio"/> Self-defense officials, judicial police staff, other public security workers
<input type="radio"/> Agriculture, forestry, and fishery workers
<input type="radio"/> Manufacturing facility control, machine assembly facility control and monitoring workers
<input type="radio"/> Product manufacturing and processing workers, machine assembly workers, machine maintenance and repair workers
<input type="radio"/> Workers engaged in product/machinery inspection, production related, or production type work
<input type="radio"/> Railway, motor vehicle, ship, aviation, and other transport workers
<input type="radio"/> Stationary and construction machinery operators, construction workers, electrical workers, and civil engineering worker
<input type="radio"/> Other

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Q41	What job did you hope to take up while you were enrolled in the doctoral course? Please select all applicable answers. (Mark all applicable answers.)
<input type="checkbox"/> Management government official	
<input type="checkbox"/> Officers of companies and organizations	
<input type="checkbox"/> Management staff of companies and organizations	
<input type="checkbox"/> Other administrative and managerial workers	
<input type="checkbox"/> Natural science researchers	
<input type="checkbox"/> Humanities, social science, and other researchers	
<input type="checkbox"/> Agriculture, forestry, and fishery engineers	
<input type="checkbox"/> Manufacturing engineers (development)	
<input type="checkbox"/> Manufacturing engineers (except development)	
<input type="checkbox"/> Architects, civil engineers and surveyors	
<input type="checkbox"/> Data processing and communication engineers (system administrator, Communication network engineers)	
<input type="checkbox"/> Doctors	
<input type="checkbox"/> Dental surgeons	
<input type="checkbox"/> Veterinary surgeons	
<input type="checkbox"/> Pharmacists	
<input type="checkbox"/> Public health nurses, midwives, nurses	
<input type="checkbox"/> Medical technicians (diagnostic radiographers, physiotherapists, dental hygienists, nutritionists, acupuncturists, etc.)	
<input type="checkbox"/> Social welfare specialist professionals (childcare workers, welfare counseling guidance professionals, etc.)	
<input type="checkbox"/> Legal workers (judges, attorneys, judicial scriveners etc.)	
<input type="checkbox"/>	

<input type="checkbox"/> Management, finance, and insurance professionals (certified public accountants, licensed tax accountants, certified social insurance and labor consultant, etc.)
<input type="checkbox"/> Management/business consultants
<input type="checkbox"/> Schoolteacher (kindergarten) including schools for students with special needs
<input type="checkbox"/> Schoolteacher (elementary/junior high school) including schools for students with special needs
<input type="checkbox"/> Schoolteacher (high school) including schools for students with special needs
<input type="checkbox"/> Schoolteacher (technical college, junior college)
<input type="checkbox"/> Schoolteacher (university, graduate school)
<input type="checkbox"/> Other type of teacher
<input type="checkbox"/> Workers in religion
<input type="checkbox"/> Authors, journalists, editors
<input type="checkbox"/> Artists, designers, photographers, film operators
<input type="checkbox"/> Musicians, performers, actors, etc.
<input type="checkbox"/> Other specialist professionals (librarians, curators, counselors, etc.)
<input type="checkbox"/> General clerical workers (general affairs workers, human affairs workers, receptionists secretaries)
<input type="checkbox"/> Accountancy clerks (accountants business clerks etc.)
<input type="checkbox"/> Production-related clerical workers
<input type="checkbox"/> Sales clerks
<input type="checkbox"/> Outdoor service workers (money collectors, investigators)
<input type="checkbox"/> Transport and post clerical workers
<input type="checkbox"/> Office equipment operators
<input type="checkbox"/> Merchandise sales, sales, and other sales-related workers (retailers, shop assistants, etc.)
<input type="checkbox"/> Domestic support service workers, care service workers
<input type="checkbox"/> Healthcare service workers, domestic hygiene service workers
<input type="checkbox"/> Food and drink preparatory workers, customer service workers
<input type="checkbox"/> Residential facilities, office buildings and other management personnel
<input type="checkbox"/> Other service workers
<input type="checkbox"/> Self-defense officials, judicial police staff, other public security workers
<input type="checkbox"/> Agriculture, forestry, and fishery workers
<input type="checkbox"/> Manufacturing facility control, machine assembly facility control and monitoring workers
<input type="checkbox"/> Product manufacturing and processing workers, machine assembly workers, machine maintenance and repair workers
<input type="checkbox"/> Workers engaged in product/machinery inspection, production related, or production type work
<input type="checkbox"/> Railway, motor vehicle, ship, aviation, and other transport workers
<input type="checkbox"/> Stationary and construction machinery operators, construction workers, electrical workers, and civil engineering worker
<input type="checkbox"/> Other
<input type="checkbox"/> None of the above

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【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q42	<p>Which one of the following ways best describes to find your principle job? (Mark one answer.)</p> <p>※Includes the use of Internet</p>
------------	--

- Graduate school (introduced by an adviser, etc.)
- Personal connections (including friends, acquaintances, etc.)
- Public organization such as Hello Work*
- Private-sector employment agency (excluding the graduate school)*
- Employment information website, recruitment information magazine, newspapers, brochures, etc.
- JST's JREC-IN system
- Website of organization
- Visits to organization
- Reference from previous organization or company
- Secondment
- Return from secondment
- Introduced through a medical office
- Start-up business
- Other Specifically:

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【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q43	<p>Which one of the following best describes your principle employer? (Mark one answer.)</p> <p>* For special researchers at the Japan Society for the Promotion of Science, tell us about the organization you belong to.</p>
------------	---

- University, etc .
- Public research institution
- Private-sector corporation
- Non-profit organization (including schools, administrative agencies, etc.)
- Sole proprietor
- Other/Independent

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【条件】
Q43の選択肢『3.Private-sector co...』～『6.Other/Independent』の中でいずれかを選択した

Q44	<p>Which one of the following reasons best describes to decide your principle job? (Mark all applicable answers.)</p>
------------	--

- I felt that I would be able to apply my research experience
- I wanted to expand my horizons and take up the challenge of a new job outside the research sector
-

I expected good remuneration and treatment

I had lost interest in working in a university (research work)

There are few stable positions at universities, etc., and no future prospects for career or life

Other Specifically:

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【条件】
 Q43の選択肢『2.Public research i...』～『6.Other/Independent』の中でいずれかを選択した

Q45	<p>Which one of the following best describes employer’s main business or industry – that is, what does that employer do? (Mark one answer.)</p> <p>If you are a temporary dispatched employee, please select “Service industry (excluding services in other categories)” which is the industry of the organization that dispatched you. For special researchers at the Japan Society for the Promotion of Science, tell us about organization you belong to.</p>
------------	--

Agriculture, forestry and fishery

Mining and quarrying of stone and gravel

Construction

Manufacturing

Electricity/Gas/Heating/Water

Information and communications

Transportation/Postal services

Wholesale

Retail

Finance/Insurance

Real estate/Goods leasing

Academic research/Specialty or technical services

Accommodations/Food and beverage services

Lifestyle-related services/Entertainment

Education/Learning support

Healthcare/Welfare

Service industry (excluding services in other categories)

Civil service (excluding services in other categories)

Other Specifically:

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【条件】
 Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q46	<p>Counting all locations where the employer operates, how many people work for your principal employer? (Mark one answer.)</p>
------------	---

- 5 or fewer employees
- 6 – 20 employees
- 21 – 50 employees
- 51 – 100 employees
- 101 – 200 employees
- 201 – 300 employees
- 301 – 1,000 employees
- 1,001 or more employees
- I do not know

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【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q47 What is the capital of your current employer?
(Mark one answer.)

- Less than 10 million yen
- 10 million yen – Less than 30 million yen
- 30 million yen – Less than 50 million yen
- 50 million yen – Less than 100 million yen
- 100 million yen – Less than 300 million yen
- 300 million yen or more
- I do not know

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【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q48 Which one of the following best describes employment status?
(Mark one answer.)

- Regular employee/staff
- Dispatched worker
- Contract employee (including temporary work), fixed-term researcher
- Part-time worker
- Business operator (including domestic worker, working from home)
- Other

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【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q49	<p>During a typical week on your job, how many hours do you work? (Mark one answer.)</p> <p>*Also includes overtime work and side jobs. * If you are on leave, please enter the average time before leave.</p>
------------	--

- Less than 15 hours
- 15-19 hours
- 20-21 hours
- 22-29 hours
- 30-34 hours
- 35-39 hours
- 40-42 hours
- 43-45 hours
- 46-48 hours
- 49-59 hours
- 60-64 hours
- 65-74 hours
- 75 hours or more

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【条件】
Q49の選択肢『1.Less than 15 hours』～『6.35-39 hours』の中でいずれかを選択した

Q50	<p>For which of the following reasons do you usually work fewer than 40 hours per week on your job? (Mark all applicable answers.)</p>
------------	---

- retired
- student
- family responsibilities
- disability
- have other job
- do not need or want to work
- Other Specifically:

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【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q51	<p>What is your annual salary or earned income before deductions between January 1, 2019 and December 31, 2019? (Mark one answer.)</p> <p>* Include bonuses, overtime, or additional compensation.</p>
------------	--

- No income
- Less than 0.5 million yen

- 0.5 million—Less than 1 million yen
- 1 million—Less than 2 million yen
- 2 million — Less than 3 million yen
- 3 million — Less than 4 million yen
- 4 million — Less than 5 million yen
- 5 million — Less than 6 million yen
- 6 million — Less than 7 million yen
- 7 million — Less than 8 million yen
- 8 million — Less than 9 million yen
- 9 million — Less than 10 million yen
- 10 million — Less than 12 million yen
- 12 million — Less than 15 million yen
- 15 million yen or more

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【条件】
Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q52 **How would you rate your overall satisfaction with two factors below of your principle job; [Contents of the job] and [Pay and Promotion]? (Mark one answer for each.)**

1 / 2

Contents of the job

- Dissatisfied
- Somewhat dissatisfied
- Neutral
- Somewhat satisfied
- Satisfied

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Q53 **Please select the skills that you have acquired during your doctoral course that you feel are useful to you in your current job. (Mark up to three answers)**

- Logic and critical thinking skills
- A wide perspective that transcends the boundaries of the humanities and the sciences
- Communication skills
- Competencies of harmonious coexistence

<input type="checkbox"/> Creativity
<input type="checkbox"/> Adaptability
<input type="checkbox"/> Abilities to carry out with responsibility and independently
<input type="checkbox"/> Data handling skills
<input type="checkbox"/> Ability access cutting edge knowledge
<input type="checkbox"/> Ability to identify and set agenda
<input type="checkbox"/> Ability to formulate and verify a hypothesis
<input type="checkbox"/> Ability to evaluate and create societal and economic values
<input type="checkbox"/> Communication skills coping with globalization, including advanced English language proficiency
<input type="checkbox"/> Ethics
<input type="checkbox"/> Advanced specialized knowledge for understanding and solving various complex social issues from different angles
<input type="checkbox"/> Other Specifically: <input type="text"/>
<input type="checkbox"/> None in particular

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Q54	Of the skills that you selected in the previous question, through which activities do you think you acquired those skills during your doctoral course? Please select one activity that contributed most to the acquisition of each skill that you selected in the previous question. (Mark one answer for each.)
------------	---

1/16

Logic and critical thinking skills
<input type="radio"/> Individual research activities (study of previous research, experiments, analysis, and examination)
<input type="radio"/> Group research activities (such as collaborative research with researchers/corporations within and outside your research laboratory, etc.)
<input type="radio"/> External presentation of research results (presentations at academic conferences, writing of papers, etc.)
<input type="radio"/> Exchanges with members of the same research laboratory (such as reports on research progress, discussions with other members including the supervising faculty, etc.)
<input type="radio"/> Exchanges with researchers, etc. from different research laboratories
<input type="radio"/> Research support activities in the same research laboratory (such as miscellaneous tasks that are not directly related to your research, supervising junior members, mentoring international students, etc.)
<input type="radio"/> Graduate school lectures (curriculum)/programs
<input type="radio"/> Job-hunting activities (including internships, business start-up activities, etc.)
<input type="radio"/> Personal life (part-time job, club activities, circles, etc.)
<input type="radio"/> Other Specifically: <input type="text"/>

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【条件】

Q39の選択肢『1.Mostly working』～『4.On leave from wor...』の中でいずれかを選択した

Q55

**To what extent was your work on your principle job related to your doctoral degree?
(Mark one answer.)**

Closely related

Somewhat related

Not related

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【条件】

Q43の選択肢『1.University, etc .』、『2.Public research i...』の中でいずれかを選択した

Q56

**What type of academic positions or faculty rank do you hold?
(Mark one answer.)**

Postdoctoral researcher (Fixed-term researcher, research fellow, etc.)

Assistant professor

Specially-appointed assistant professor (including project assistant professor, program-specific assistant professor, etc.)

Research support staff (Research assistant, lab assistant, research support, technical instructor, etc.)

Lecturer(Part-time), Instructor

Lecturer (Full-time)

Professor

Associate professor

Specially-appointed professor

Specially-appointed associate professor

Engaged in other medical-related fields

Supervisor/Senior researcher

Researcher

Guest professor, Guest associate professor

Other Specifically:

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【条件】

Q43の選択肢『1.University, etc .』、『2.Public research i...』の中でいずれかを選択した

Q57

**What was your tenure status?
(Mark one answer.)**

*The tenure track system is a mechanism by which researchers can go through a review process to build up experience as independent researchers with fixed-term contracts prior to tenured position.

Tenured

- On tenure track but not tenured*
- Not tenured

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【条件】
Q57の選択肢『2.On tenure track b...』、『3.Not tenured』の中でいずれかを選択した

Q58	<p>How many years or months are you employed under your contract? Input your answer in single-byte characters.</p> <p>*Please fill in "0 months" if you were employed for less than one month.</p>
------------	--

Employment term in each contract years

months

Longest term of employment including renewals years

months

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【条件】
Q57の選択肢『2.On tenure track b...』、『3.Not tenured』の中でいずれかを選択した

Q59	<p>If you are employed under research grants, which one of the following research grants do you work? (Mark one answer.)</p> <p>*Not including government grants for national universities , student tuition fees, revenue of university hospital, Donations and other ordinary revenue. *Competitive funding is R&D funding programmes which allocate for research projects proposed by researchers under competitive condition.</p>
------------	--

Japan Society for the Promotion of Science (JSPS)'s Grant-in-Aid for Scientific Research *

Competitive funding except Japan Society for the Promotion of Science (JSPS)'s Grant-in-Aid for Scientific Research *

Other government's funding (not competitive funding)

Other funding

Not employed under research grants

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Please tell us about the status of your research work.

Q60	<p>Do you engage in research activities including publications of papers or acquiring patents? (Mark one answer.)</p>
------------	--

Yes

No

【条件】
Q60の選択肢『1.Yes』を選択した

Q61	<p>What is your total earned research grants for FY2020? Please round the figure to the nearest 10,000 yen. (Input your answer in single-byte characters.)</p> <p>*Please input the value of research funds that you have the authority to determine its use for. Please round the figure to the nearest 10,000 yen.</p> <p>*Please answer based on the amount of research funds you received in FY2020. For research funding that spans several years, if the amount for FY2020 has not been confirmed, please divide the total amount proportionally and input the figure for one year.</p> <p>*Please input only the direct expenses that can be used by the researcher, and exclude the indirect expenses.</p> <p>*If the research fund is also allocated to researcher(s) from other organizations, please exclude that amount.</p>
------------	---

Internal research grants

None

Yes: 0,000 yen

External research grants

None

Yes: 0,000 yen

Of which, competitive funding

None

Yes: 0,000 yen

【条件】
Q60の選択肢『1.Yes』を選択した

Q62	<p>How many peer-reviewed papers have you published from April 1, 2018 to the present? Of these, how many were international co-authored papers? (Input your answer in single-byte characters.)</p> <p>*If none, please input "0."</p>
------------	--

Number of peer-reviewed papers:

Of these, number of international co-authored papers:

【条件】
Q60の選択肢『1.Yes』を選択した

Q63

**How many patents do you apply from April 1, 2018 to the present?
(Input your answer in single-byte characters.)
*If none, please input "0."**

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【条件】

Q60の選択肢『1.Yes』を選択した

Q64

**Which the following research activities do you take?
(Mark all applicable answers.)**

- I have an independent research laboratory
- I am in charge of budgetary planning for the research group
- I am in charge of budgetary planning for my research application
- I am in charge of supervising a specific subordinate (graduate student)
- I was in charge of a published paper
- None of the above

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Q65

**Which the following ambitions in your future career?
(Mark one answer.)**

- I would like to get a tenure position as a researcher at a university or public research institution
- I would like to be engaged in research-related work at a university or public research institution
- I do not mind where I work, but I would like to work as a researcher
- I do not mind where I work, but I would like to be engaged in work where I can apply my research experience
- I would like work in a field outside of research/I do not mind working in a field outside of research
- Other

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Q66

**The government is considering attractive policies for students, in order to increase the enrollment in doctoral courses. Please select up to three policies, in order from the policy that you consider the most effective.
(Mark one answer for each.)**

1/3

First

- Increasing the number of university faculty
- Realizing a balanced university faculty with regard to age composition, etc.
- Improving the education curriculum for doctoral courses

- Improving the research environment for young researchers (including doctoral students)
- Improving the treatment of Ph.D. holders in the industry, such as salary
- Increasing the number of Ph.D. holders employed by the industry
- Paying a salary to students during their doctoral course
- Other Specifically:
- None in particular
- None of the above

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Q67	Thank you for your cooperation. Comments about this survey: (Please be specific in your response.)
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This is the end of the survey. Thank you for your time.

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KAWAMURA Mari HOSHINO Toshihiko

1st Policy-Oriented Research Group

National Institute of Science and Technology Policy (NISTEP)

Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan

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