

Career Trends of Recent Doctoral Graduates in Japan

Diversity of Career Paths and International Mobility

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Introduction

Japan's Third Science and Technology Basic Plan points out the need for improved fostering of doctoral recipients who can flourish in diverse roles in society. The Plan states that "since it is extremely important for each university to know the information about the career paths of the doctorates and utilize it in improving the quality of its education, each university is required to work on continuing to get such information." Understanding the activities of doctorates, especially in terms of the diversity of career paths and international mobility, has become important in order to consider the appropriate means to foster human resources through Japanese doctoral education and to plan science and technology HR policy from a global perspective.

We recently carried out a comprehensive survey for the first time to reveal the diversity of career paths and the status of the international mobility of recent doctoral graduates in Japan. The survey was conducted as part of the follow-up to the Third Science and Technology Basic Plan and aimed at contributing to the setting of the Fourth Basic Plan.

Overview of survey

Our survey targeted all doctoral graduates (including those who withdrew upon obtaining the required credits) from Japanese universities during FY 2002–2006 and collected data on individual characteristics (sex, age, nationality, research field, type of financial support and experience during doctoral education, etc.) and career paths (occupation, location, affiliation, etc.) after the completion of doctoral courses. The survey was carried out from July to October 2008. Questionnaires were sent to all the 414 universities offering doctoral courses¹.

All the 414 universities that were asked to participate in the survey responded. Data of 75,197 individuals who completed doctoral courses were collected. This number is about the same as that the number aggregated by the Ministry of Education, Culture, Sports, Science and Technology's Basic School Survey (a difference of 0.8 percent). Thus, the goal of conducting a complete survey was reached with a high degree of accuracy.

Survey results

The collected individual data were analyzed primarily from the perspectives of doctoral graduates' (1) diversity of career paths, (2) postdoctoral changes of occupation, and (3) international mobility.

Diversity of career paths (occupation immediately after completing doctoral courses)

Considering the occupations immediately after completing doctoral courses, with 15 percent becoming postdoctoral researchers and 19 percent taking a university faculty position, approximately

¹ Our survey collected data of individual doctorate recipients, but the data are only those that are known by each institution. The collection of data directly from the doctorate recipients is not assumed in the survey.

half of those who completed doctoral courses during FY 2002–2006 took a position related to research and development. On the other hand, a mere four percent took positions requiring specialist knowledge (other than physician, dentist, veterinarian, or pharmacist). (See Figure 1)

By research field, of those who took a research and development related position, the percentages for physical science, engineering, and agricultural science were particularly high, accounting for more than 60 percent. Furthermore, for postdoctoral researchers, the percentages for physical science and agricultural science were also high at around 30 percent each. (See Figure 1).

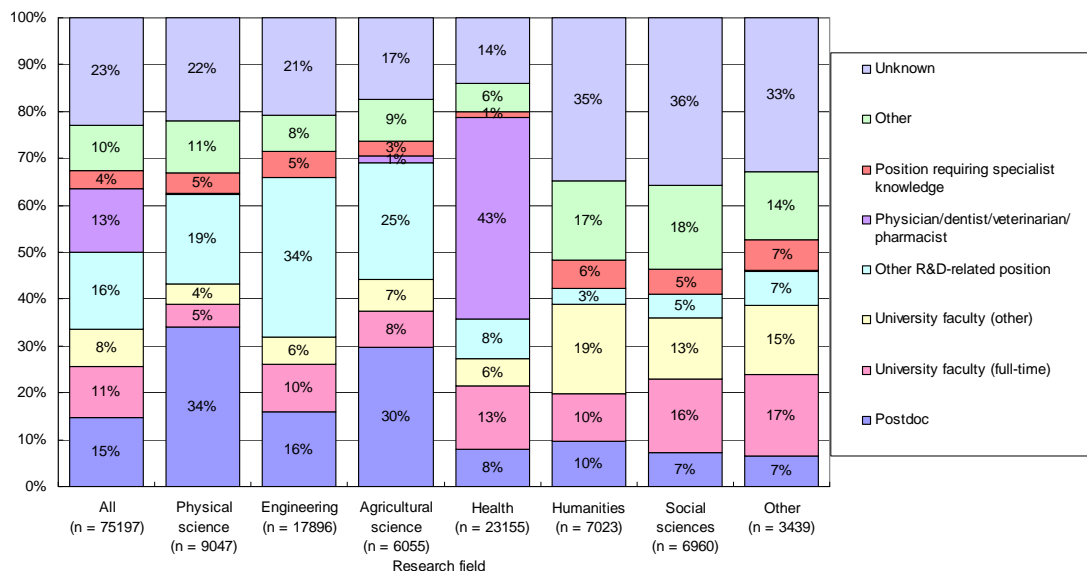


Figure 1: Occupation immediately after completing doctoral courses, by research field (for all doctorates completed during FY 2002–2006)

(1) Postdoctoral changes of occupation

- Considering those who became postdoctoral researchers immediately after completing doctoral courses, of those who completed their doctoral courses five years ago (in FY 2002), 23 percent are currently (as of April 1, 2008) postdoctoral researchers, 24 percent are university faculty (full-time), and 11 percent hold research and development related positions in sectors other than universities (excluding postdoctoral researchers). With the passage of time, the percentage of research and development related positions other than postdoctoral research increases, most notably for full-time university faculty positions.

(2) International mobility

- With regard to the locations immediately after completing doctoral courses, 73 percent of the Japanese graduates remained in Japan, while just two percent moved overseas. North America and Europe were the main overseas destinations. Most of those moving overseas took the positions of postdoctoral researchers. (See Figure 2)
- With respect to Japanese who completed doctoral courses and immediately became postdoctoral researchers in the USA, the percentage of researchers who returned to Japan increased each year after completion. In particular, more than half of those who completed their doctoral courses five years ago have returned to Japan.
- With regard to international graduates, 30 percent remained in Japan immediately after completion, while at least 31 percent moved overseas.
- With respect to international graduates who stayed in Japan or moved to a third country immediately after completion, the percentage of researchers taking a postdoctoral position was

higher than that of those moving to their home country². Those who remain in Japan immediately after completion tend to leave with the passage of time.

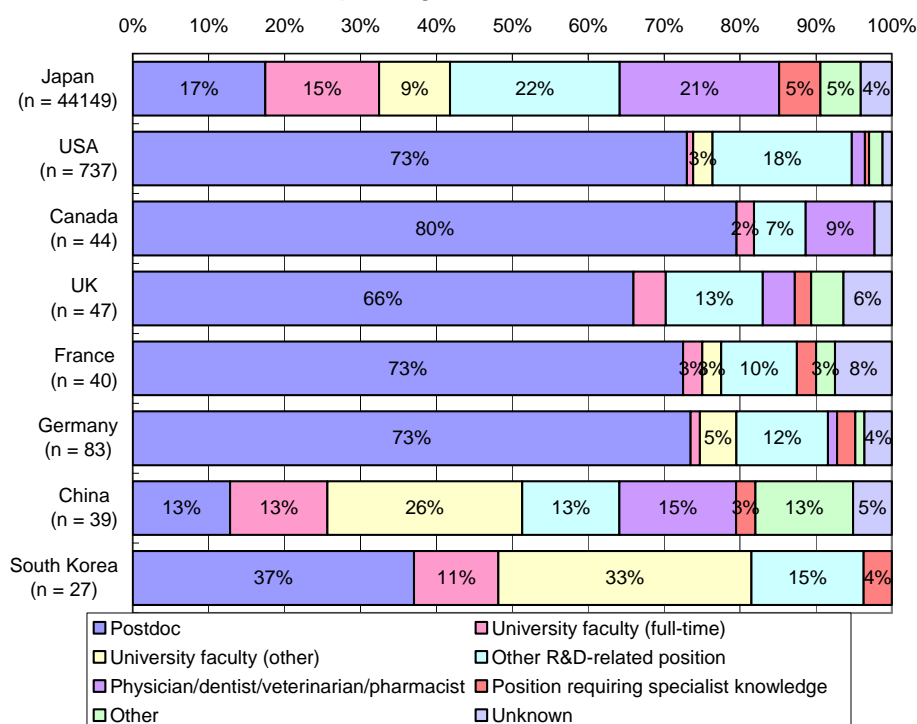


Figure 2: Locations and occupations of Japanese graduates immediately after completion of doctoral courses (for all doctorates completed during FY 2002–2006)

Further consideration

From the results of our survey, the following issues deserve further consideration.

- With respect to those who become postdoctoral researchers immediately after completing doctoral courses, some were promoted to research and development related positions (especially university faculty, etc.) other than postdoctoral research positions. However, even after five years, a certain number of them remain in postdoctoral research positions. Adequate and appropriate support should be provided to those whose terms as postdoctoral researchers extend.
- With regard to Japanese graduates, few moved overseas immediately after completion (excluding those becoming students and those not employed), indicating the limited international mobility of Japanese doctorates. In light of the fact that a high percentage of those with research experience in foreign institutions during their doctoral education tends to move overseas immediately after completion, it is important to create an environment that will promote further international mobility of Japanese doctorates.
- With respect to international graduates, even those who find work in Japan immediately after completion tend to subsequently leave the country. In order to realize the 300,000 International Students Plan, it will be important to understand this background.
- In order for Japan’s doctoral graduates to participate in the diverse sectors of society, a sustained

² "Return" herein is limited to those from whose citizenship a home country can be specified.

grasp of accurate career path information is fundamentally important. From the perspective of verifying and improving their own educational results, universities with doctoral courses should make further efforts to understand the career path trends for doctorate recipients and actively share the related data. In addition, from the perspective of establishing Japan's science and technology policy, because the occupations of doctoral graduates easily change for a certain period of time after they complete their doctoral courses, organizational frameworks and systems need to be established in order to carry out ongoing, effective surveys of doctorate recipients.