

**The 4th Large-Scale Survey of Actual
Conditions of Gender Equality in Scientific
and Technological Professions**

Survey Report

Concise Summary

August 2017

**Japan Inter-Society Liaison Association Committee for
Promoting Equal Participation of Men and Women in Science
and Engineering (EPMEWSE)**

Concise Summary of “The 4th Large-Scale Survey of Actual Conditions of Gender
Equality in Scientific and Technological Professions (Survey Report)”

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JAPAN

This report summarizes the results of “The 4th Large-Scale Survey of Actual Conditions of Gender Equality in Scientific and Technological Professions” which was carried out by EPMEWSE. It may not be reproduced, reprinted, or excerpted without the prior written permission of EPMEWSE.

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English terms

A brief supplement for the specific English terms used in this survey.

Page or figure number	English term to appear in the survey	Japanese term to appear in the original survey	Alternative English term or short description
p. 1 etc.	limited-term employment	任期付き職	fixed-term employment (or fixed-term contract)
p. 2 etc.	no-term employment	任期なし職	permanent employment (or permanent contract)
p. 2 etc.	technical colleges	高専	colleges of technology (or National Institute of Technology, Japan)
p. 2 etc.	regular employee	一般職	a clerical position with limited possibilities for promotion
p. 4 (Fig. 1.4)	Doctoral Degree (Course)	課程博士	Doctoral Degree (Course-based)
p. 4 (Fig. 1.4)	Doctoral Degree (Non-course)	論文博士	Doctoral Degree (Thesis-based)
p. 4 (Fig. 1.4)	Doctoral Degree (Both Course and Non-course)	課程論文両方	Doctoral Degree (Both Course and Thesis)
p. 21	Experience with Job Change/Relocation/Quitting Job	離職・転職・異動の有無	Experience of Job Resignation/Change/Relocation
p. 25	workplace hours	在職場時間	hours at workplace
p. 40 (Fig. 1.69)	Dual Career Support Program	同居支援制度/帯同支援制度	Supporting system of faculty hiring who with an accompanying spouse
p. 46 (Fig. 1.78)	Middle school	中学	Junior high school
p. 50	Changes in "work as center" concept	仕事中心の考え方を変える	Change the work-centered way of thinking
p. 51 (Fig. 1.93)	Balancing Family and Work	仕事と家庭の両立	Maintaining a Healthy Work-Life(or Work-Family) Balance
p. 51 (Fig. 1.93)	Municipal Childrearing Support	ファミリーサポート	A local parenting project supported by Japan's Ministry of Health, Labor and Welfare. That is so called "Fami-Supo (Family-Support)" in Japan.
p. 54 (Fig. 1.95)	Joint researcher	共同研究者	Collaborator
p. 56 (Fig. 1.98)	Aggressive hiring	積極採用	Active hiring/ Active recruitment for female
p. 59 (Fig. 1.105)	Numerical Target for Female Hiring	女性比率の数値目標	Numerical Target for Female Employment Rate

Page or figure number	English term to appear in the survey	Japanese term to appear in the original survey	Alternative English term or short description
p. 63 (Fig. 1.112)	Separate surnames for married couples	夫婦別姓	Couple having different surnames / Married couples with different surnames
p. 76 (Fig. 3.9)	Care Giver During Academic Society Functions	学会参加時の保育担当者	People Providing Childcare Support during Academic Conference
p. 80 (Fig. 3.14)	General Staff	一般社員	Regular Employee
p. 93 (Fig. 3.19)	Frequent early retirement or leave of absence	女性に中途離職や休職が多い	Women have high rates of early retirement and leave of absence
p. 93 (Fig. 3.19)	Female ratio is low for the generation currently in leadership position	現在指導的地位にある世代の女性比率が低い	The female labor force participation rate is low in the generation currently in leadership positions

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Preface

The Japan Inter-Society Liaison Association Committee for Promoting Equal Participation of Men and Women in Science and Engineering (EPMEWSE) conducts a large-scale survey roughly every four years on gender equality in the science and engineering professions “to understand the current environment surrounding the communities of science and engineering professionals, to identify issues and to propose recommendations.”¹⁾ The first and second surveys were carried out under the consignment of Japan’s Ministry of Education, Culture, Sports, Science and Technology, but from the third survey, the EPMEWSE itself has been working on the project with the combined strength of its member academic societies. Our intention is to capture the trends over time through periodic research, investigate the awareness of the gender equality related laws and policies set up with the movement of the times, verify the effect of government projects and recommend new policies as necessary.

Raising productivity and innovation power in Japan, which has entered an era of depopulation, is a challenging issue, and how women work is drawing attention as a key to solving that issue. “To maintain and strengthen international competitiveness and to revitalize science and technology/academic activities incorporating various perspectives and ideas,” as stated in the Fourth Basic Plan for Gender Equality (approved by Cabinet in December 2015), and “to incorporate a broad array of perspectives and excellent ideas in the stimulation of STI (Science, Technology and Innovation) activities,” as stated in the 5th Science and Technology Basic Plan (approved by the Cabinet in January 2016), “it will be essential to develop environments in which women have opportunities to exert their abilities to the fullest and to continue to promote the advancement of their careers.” For the comprehensive promotion of women’s activities, the “Act on Promotion of Women's Participation and Advancement in the Workplace” was placed in to full effect in April 2016. The act made it obligatory for national and local governments as well as private enterprises to comprehend the situation concerning the activity of women, analyze issues, formulate action plans, and publish information. Internationally, at the G7 Ise Shima Summit in 2016, which Japan chaired, the world leaders declared their commitment “to empowering women and girls, including through capacity-building such as education and training as well as promoting active role of women in Science, Technology, Engineering and Mathematics (STEM) fields,” and for that purpose set up the “Women’s Initiative in Developing STEM Career (WINDS).”

Against such social trends, this research study clarified how the current situation of female researchers and engineers is changing along with the situation of their male counterparts. Similar to the third survey, we considered “Gender Gap in Job Positions,” “Child and Nursing Care,” “Limited-term Employment and Postdocs” and “Programs and Policies” as important topics in our analysis. The number of responses to the latest survey exceeded 18,000 surpassing the number received in previous surveys, and more than 4,500 comments were gathered making the report more content rich than ever before. We would like to thank the survey participants from each academic society for their cooperation, and as with previous reports, we strongly hope that this report will contribute to the promotion of gender equality and further development of science and technology.

1) Japan Inter-Society Liaison Association Committee for Promoting Equal Participation of Men and Women in Science and Engineering, Report on the MEXT-Commissioned Project in FY2003 “Diverse Visions of Scientists and Engineers in the 21st Century -For the Promotion of Gender Equality-,” March 2004

Survey Results

In the fourth survey, a questionnaire containing 88 questions covering 42 items was prepared. The survey was carried out through a Website from October 8 to November 7, 2016 targeting members of academic societies.

Note:

In the fourth survey, the following common definitions apply in each chapter.

○ Affiliated institution

Affiliated institution is divided into five categories of “university/technical college”, “research institution”, “corporation”, “government” and “others”.

○ Occupational field

Based on job title, occupational field is divided into five major categories.

Two categories for “university/technical college” and research institution”:

① PI: Principal Investigator (professor, associate professor, lecturer, dean, director, division head, group lab chief, senior researcher)

② NPI: Not Principal Investigator (assistant professor, research assistant, researcher (including limited-term researcher), research technician)

Two categories for “government” and “corporation”:

③ manager (executive director, general manager, senior manager, manager)

④ regular employee (group leader, general staff)

One category for:

⑤ student

These categories were further divided into nine categories depending on the presence of term limits. That is, (A) no-term PI, (B) limited-term PI, (C) no-term NPI (excludes no-term researcher), (D) limited-term NPI (excludes limited-term researcher), (E) no-term researcher, (F) limited-term researcher (includes researcher reappointed to limited-term employment after reaching retirement age), (G) manager (corporate executive director, general manager, senior manager, manager), (H) regular employee (group leader, general staff), and (I) student.

Chapter 1 Summary of Results

1.1 Basic Data

Age Group and Gender (Questions 1, 2; Figures 1.1-2)

There were 13,162 male and 4,997 female (28%) respondents.

Percentage of female respondents decreased as age increased.

The peak age group was higher for males.

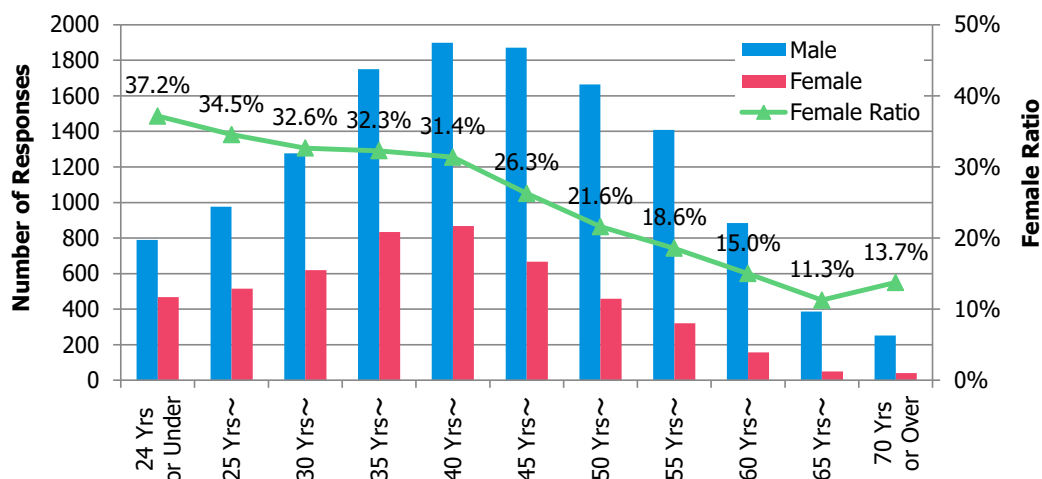


Figure 1.1 Age Distribution of Respondents and Percentage of Females

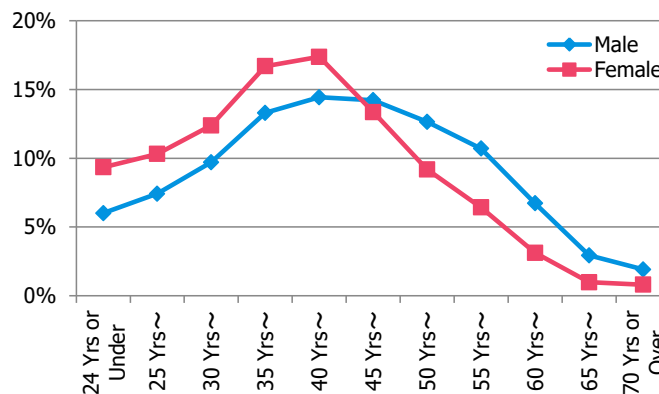


Figure 1.2 Age Distribution of Respondents by Gender

Highest Academic Degree (Questions 3, 4; Figures 1.3-7)

As far as the highest level of education is concerned, the percentage that responded with bachelor's degree was slightly higher for females. Otherwise, it was about the same for both males and females.

Those with a doctoral degree are slightly higher for males, but the difference is shrinking.

The overall degree acquisition rate is 65% with a sharp increase for both males and females in their 30's.

The percentage of males who have had their doctoral degree for over 16 years has reached 45%, but the rate is only 31% for females.

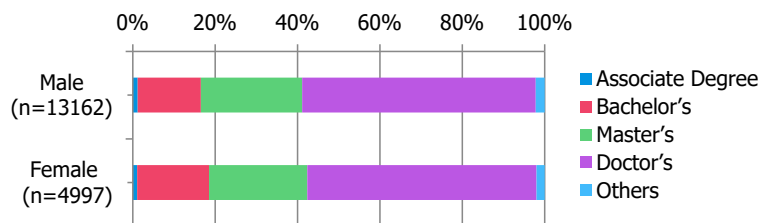


Figure 1.3 Highest Academic Degree (Single Answer)

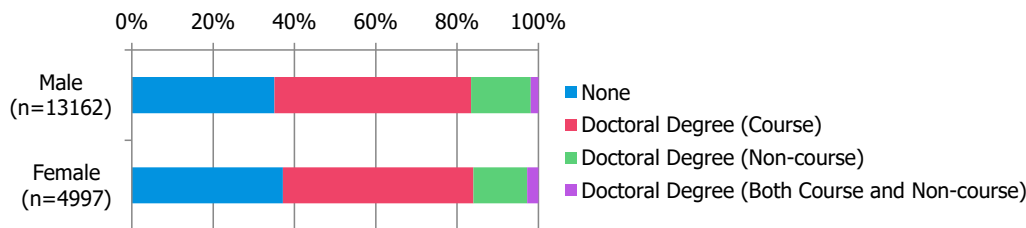


Figure 1.4 Types of Doctoral Degree (Single Answer)

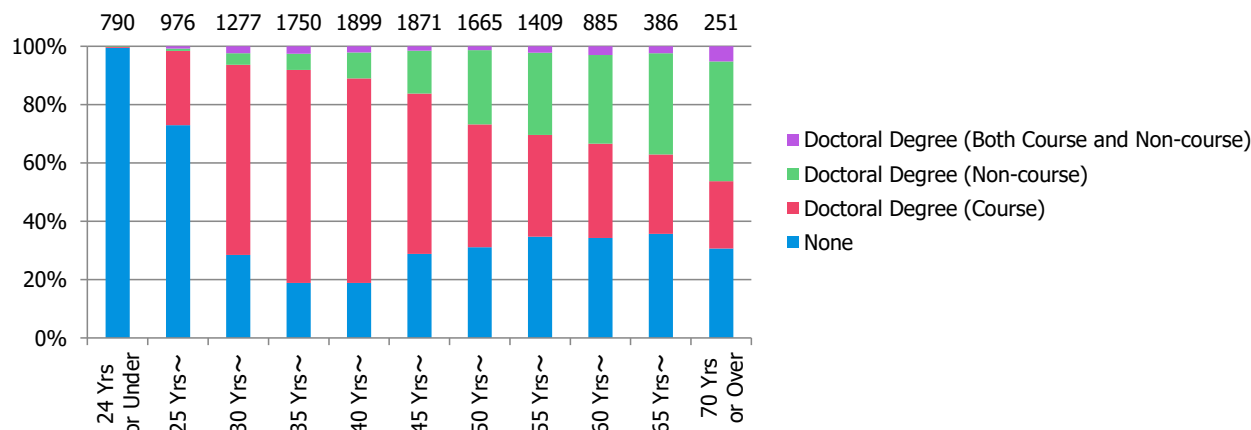


Figure 1.5 Male Respondents with Doctoral Degree by Age Group (Single Answer)

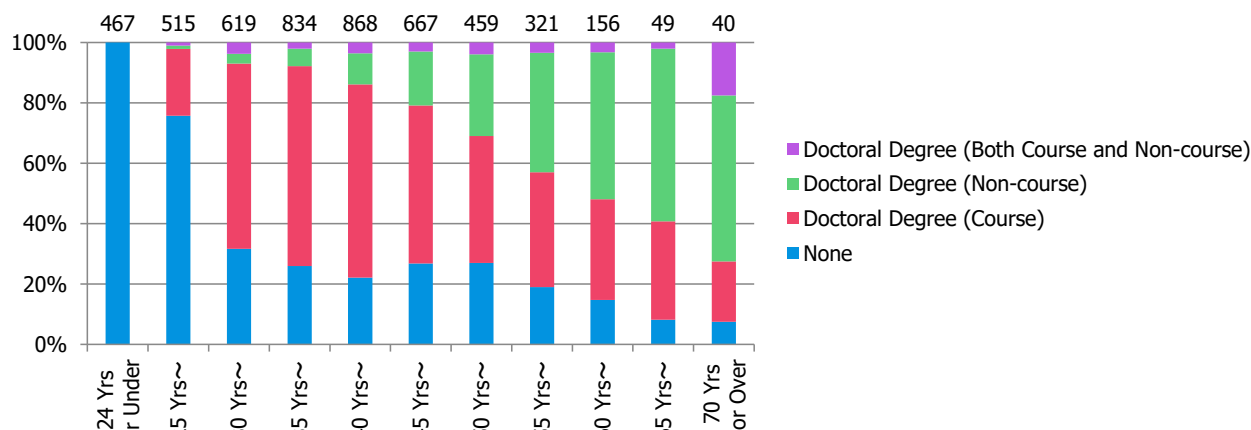


Figure 1.6 Female Respondents with Doctoral Degree by Age Group (Single Answer)

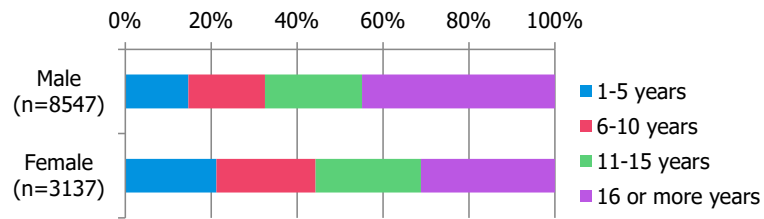


Figure 1.7 Years Elapsed Since Aquiring Degree (Single Answer)

Affiliated Academic Societies (Question 5; Figure 1.8)

The female ratio of survey respondents was higher than the female ratio of society members for all academic societies.

On average, each person is affiliated with 1.65 academic societies.

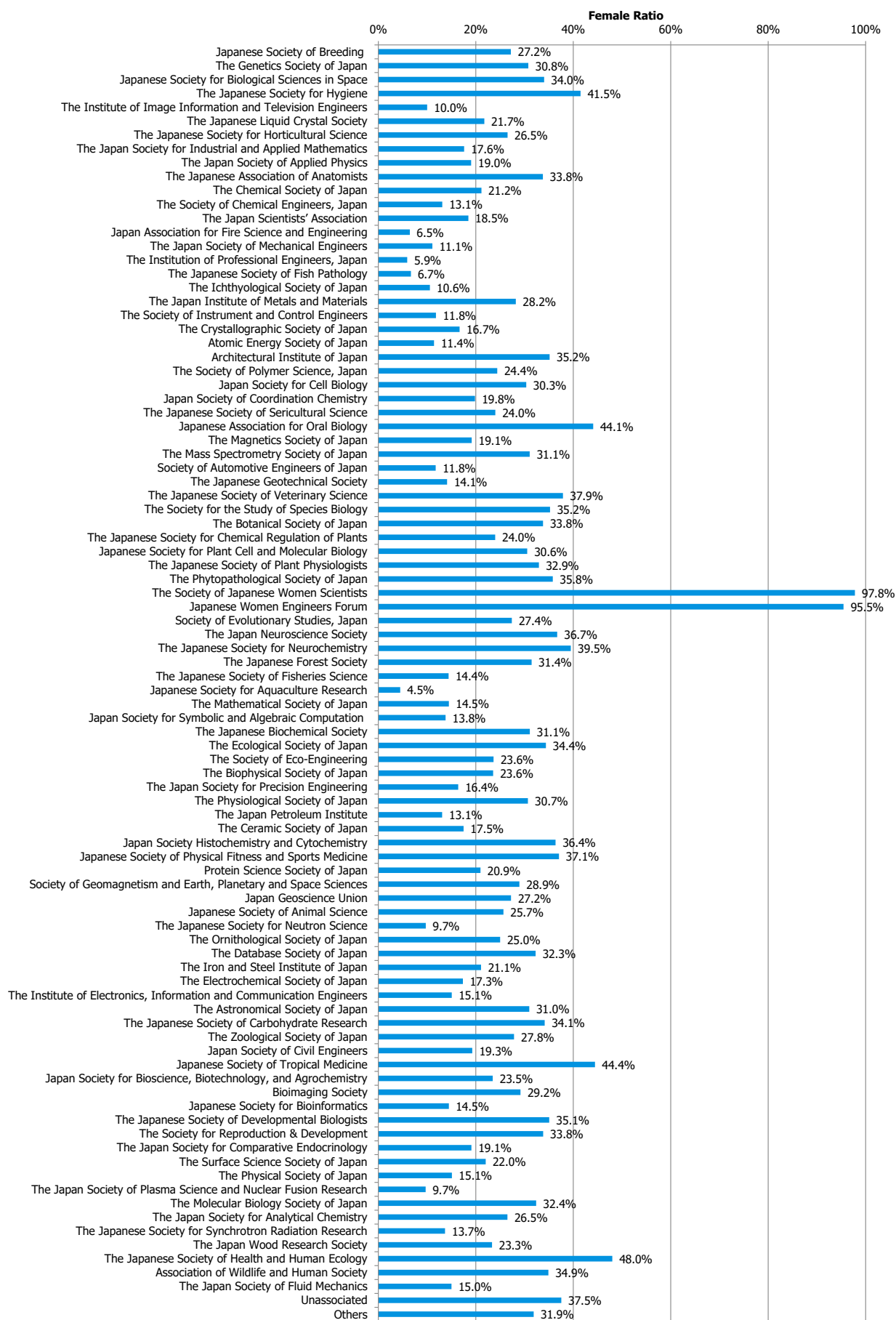


Figure 1.8 Respondents' Affiliated Academic Society and Percentage of Females (Multiple Answers)

Employment Status (Question 6; Figure 1.9)

About 85% of the respondents are currently employed, and no big difference was seen between genders.

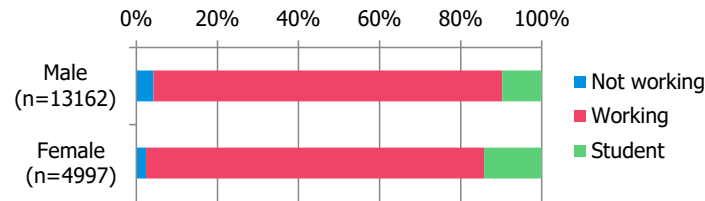


Figure 1.9 Current Employment Status (Single Answer)

Breakdown of Respondents by Profession (Question 6; Figure 1.10)

The largest number of responses came from those in the life science and biology field.

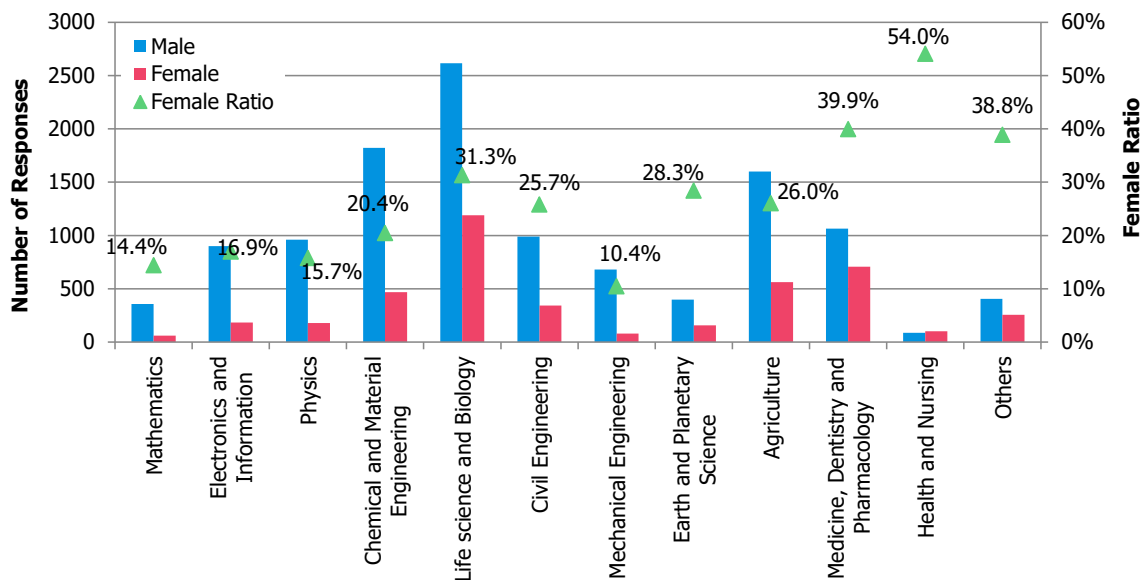


Figure 1.10 Number of Respondents by Profession (Single Answer)

Breakdown of Respondents by Profession and Job Category (Question 6, 8; Figure 1.11)

In terms of job category, large portion of engineering professionals was with a corporation, and respondents in technical and sales jobs were high.

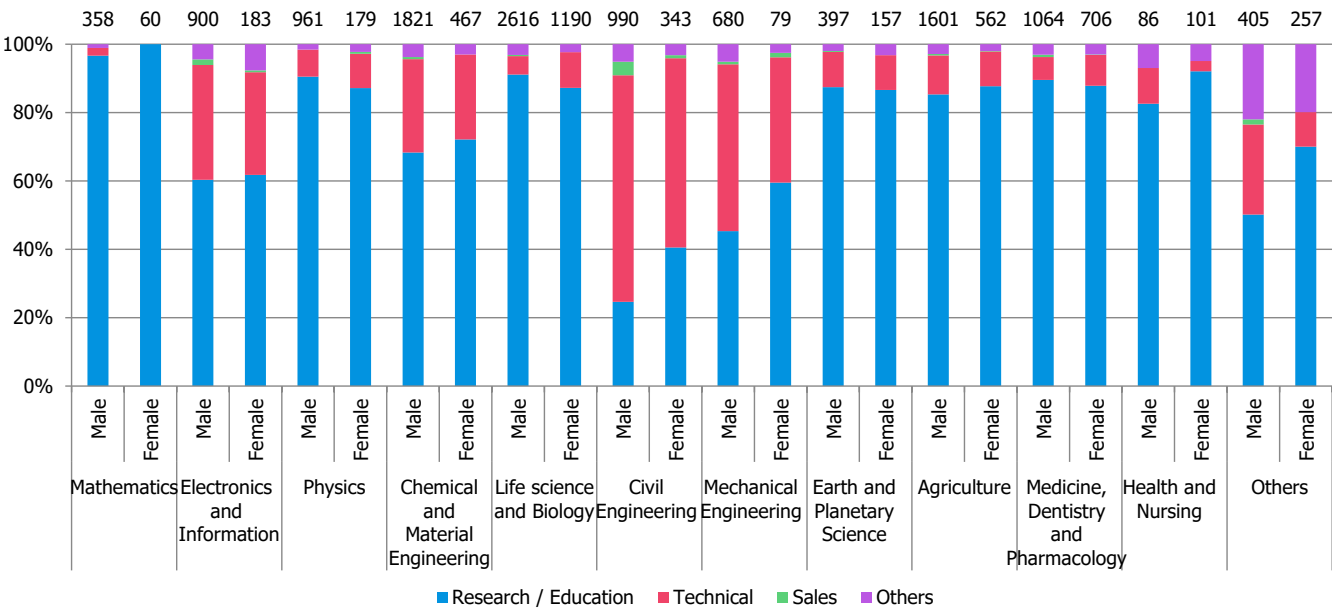


Figure 1.11 Respondents' Job Category by Profession (Single Answer)

Affiliated Institution (Question 6; Figures 1.12-16)

Respondents' affiliation was highest with university/technical college. There was a 6 to 10 point difference in female ratios of corporation and government (20% and 23%, respectively) compared with university and research institution (30% and 29%, respectively).

For both genders, almost all mathematics professionals were affiliated with a university while ratio of engineering professionals was high with the corporation.

Looking at the same data by affiliated institution, life science and biology accounted for a large portion with university and research institution.

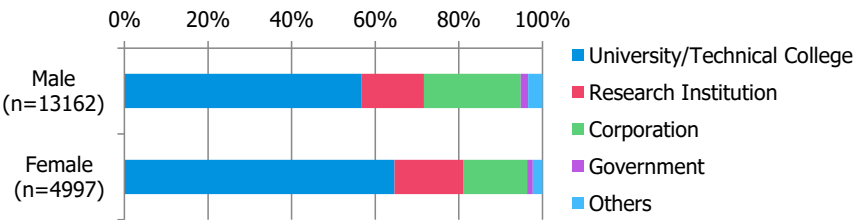


Figure 1.12 Respondents' Affiliated Institution (Single Answer)

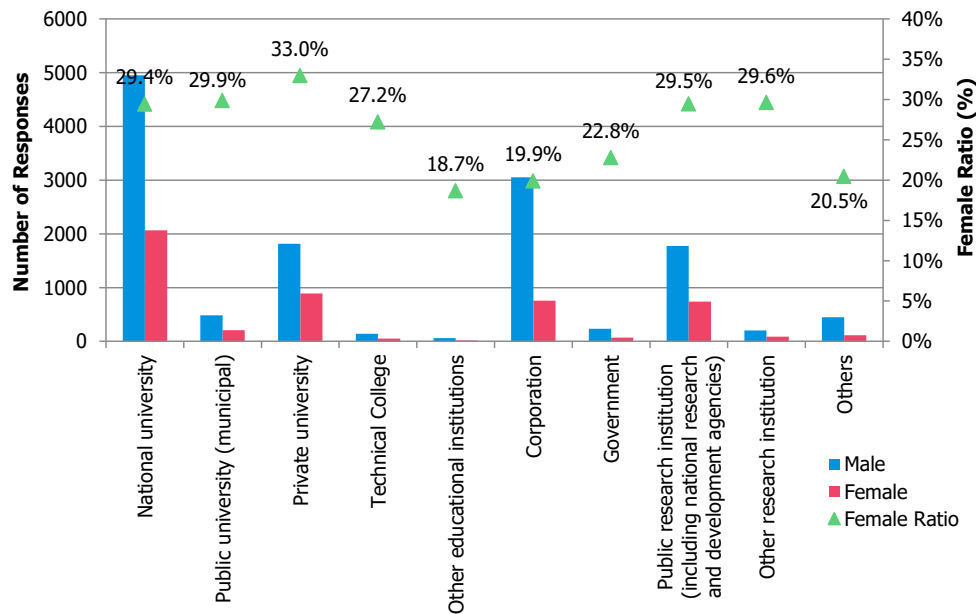


Figure 1.13 Number of Respondents by Institution and Percentage of Females (Single Answer)

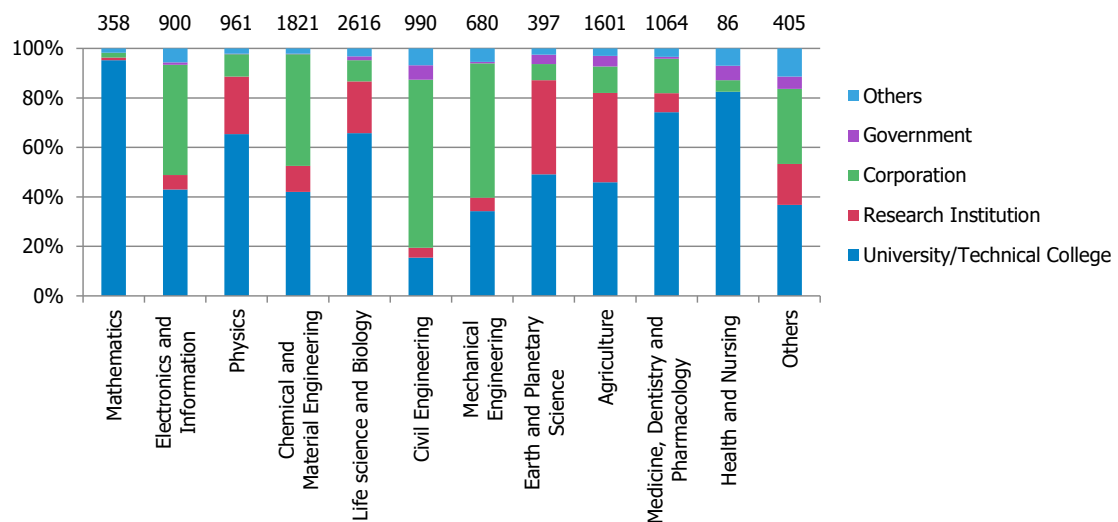


Figure 1.14 Male Respondents' Affiliated Institutions by Profession (Single Answer)

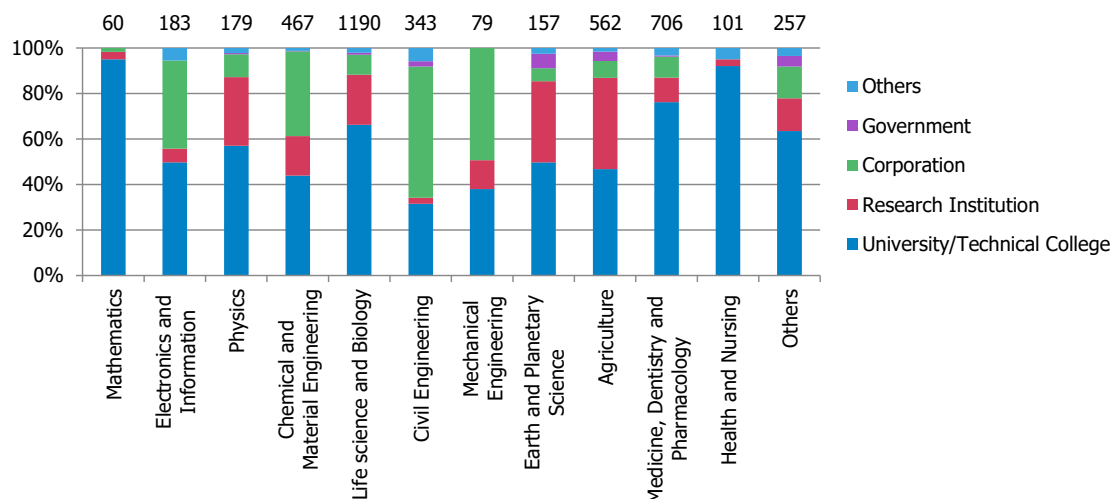


Figure 1.15 Female Respondents' Affiliated Institution by Profession (Single Answer)

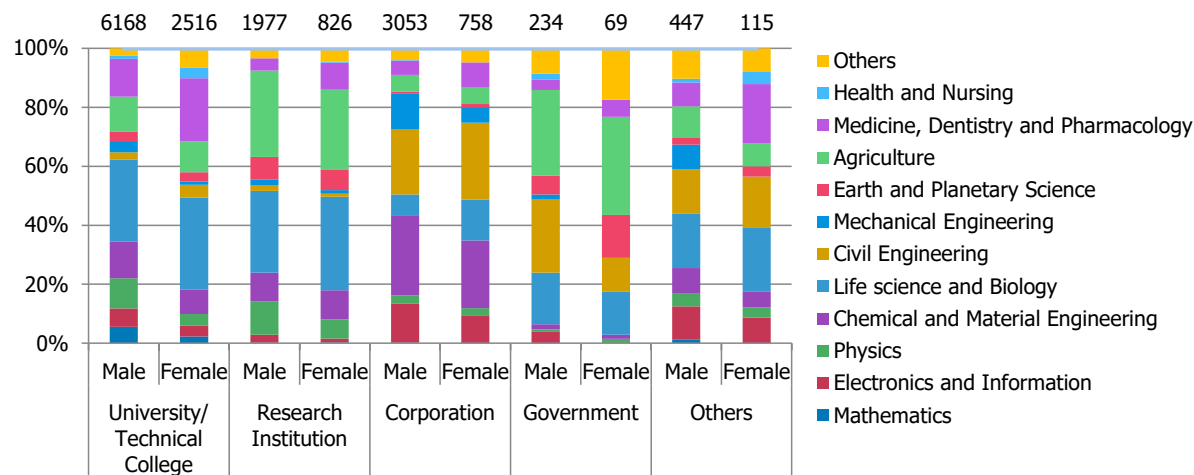


Figure 1.16 Breakdown of Professions by Affiliated Institution (Single Answer)

Job Position (Question 7; Figure 1.17)

As job position gets higher, female ratio becomes smaller.

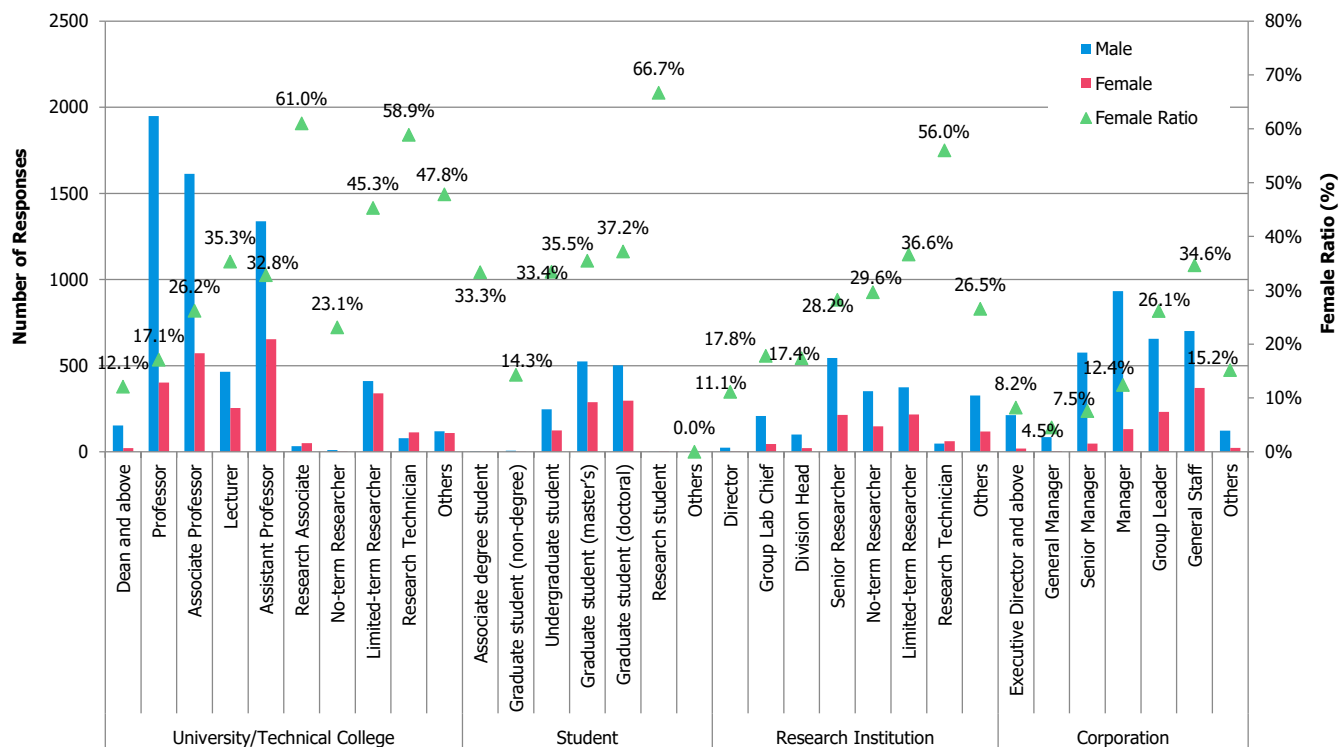


Figure 1.17 Response by Job Positions (Multiple Answers) and Percentage of Females

Job Category (Question 8; Figures 1.18-20)

For both genders, about 80% were in research and education jobs. Looking at the ratios of doctoral degree acquisition by job category, more than 80% of those in research and education held a degree compared with only about 20% for technical jobs. A gender gap was observed in sales jobs as the ratios of those with a degree were 20% for males and almost none for females.

In job categories by affiliated institution, there were no big differences between genders in university/technical

college and research institution, however in corporation, number of females in research and education jobs tended to be higher.

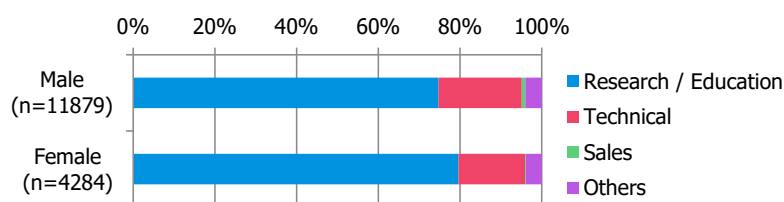


Figure 1.18 Percentage of Research and Technical Jobs (Single Answer)

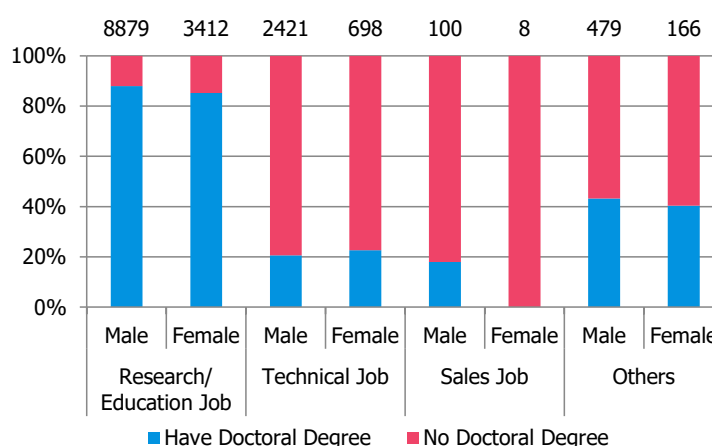


Figure 1.19 Respondents with Doctoral Degree by Job Category (Single Answer)

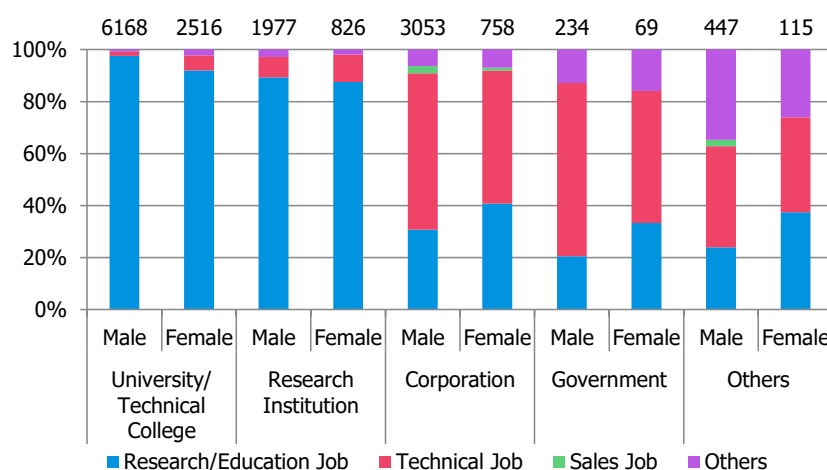


Figure 1.20 Respondents' Job Category by Affiliated Institution (Single Answer)

Annual Salary (Question 9; Figures 1.21-22)

There was a huge difference between genders in terms of annual salaries as males peaked around the 6 to 9 million JPY range while the peak range for females was around 6 to 7 million JPY.

In almost all affiliated institutions and age groups, the average annual salaries of females were lower at about 80% of males.

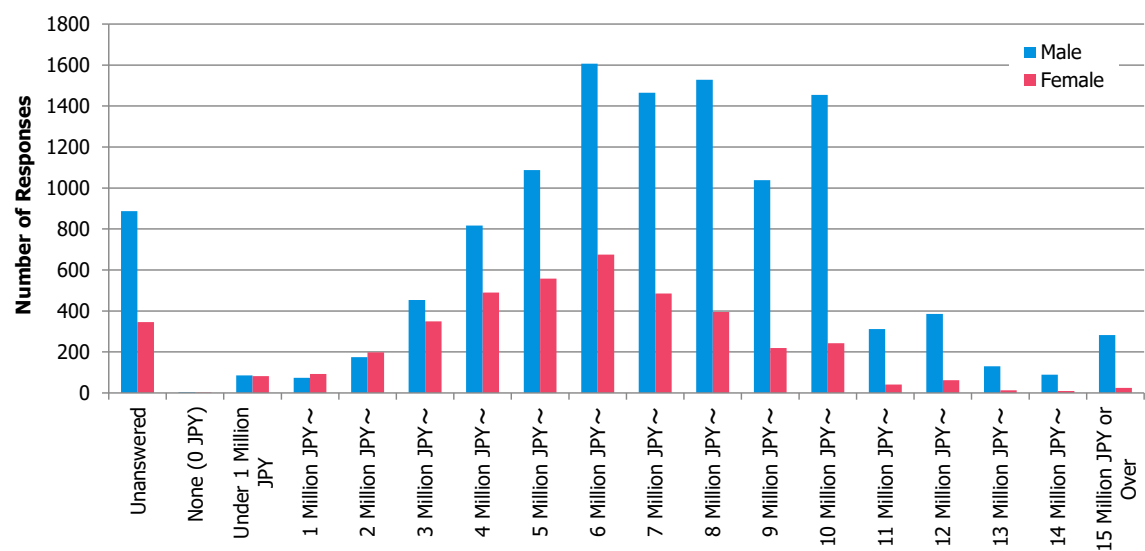


Figure 1.21 Annual Salary by Gender (Single Answer)

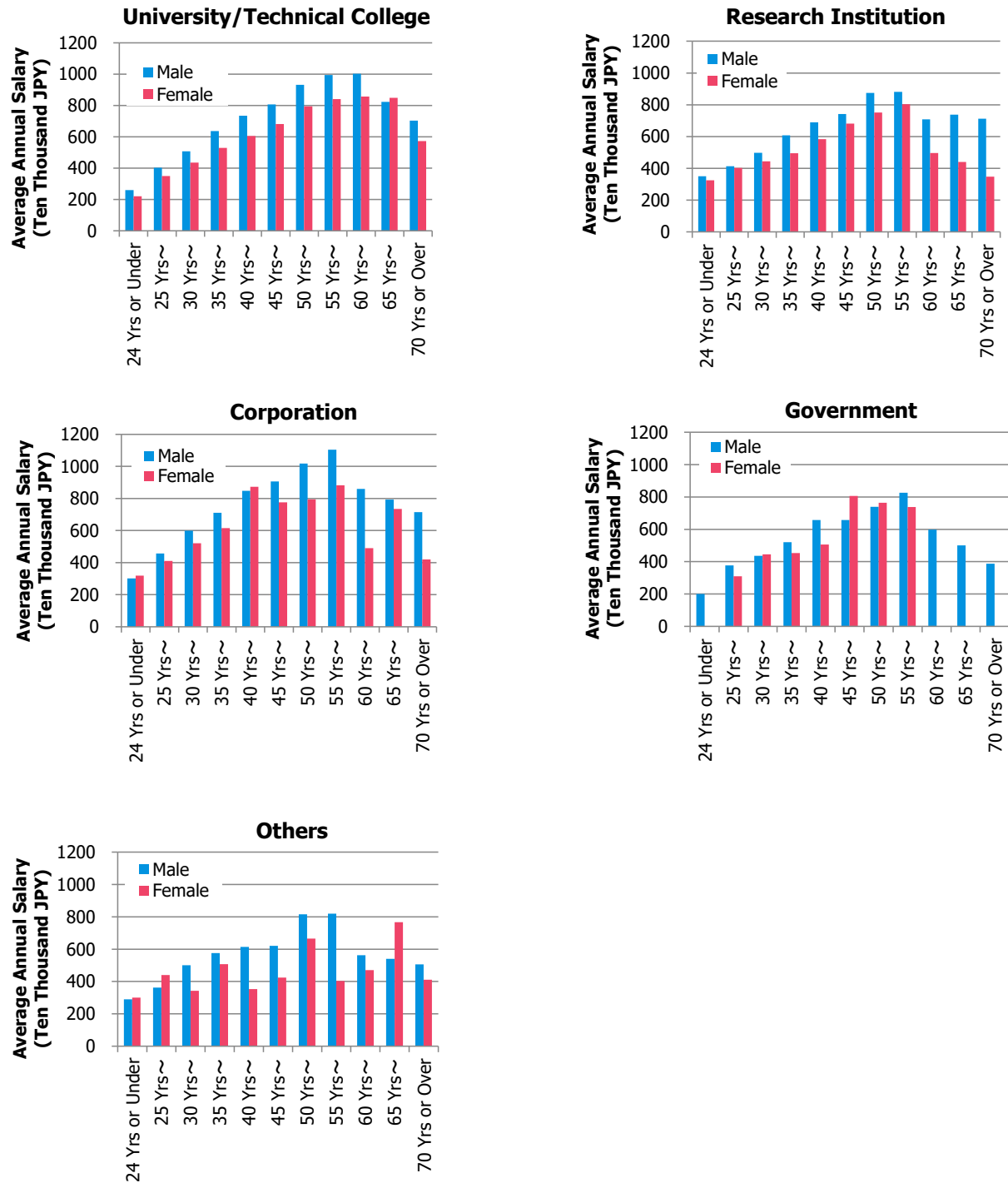


Figure 1.22 Annual Salary by Age Group for Each Institution (Single Answer)

1.2 Working Conditions

Employment Status (Question 10; Figures 1.23-25)

Looking at the employment status, there is a larger ratio of limited-term employment in university/technical college and research institution compared with corporation and government.

When distribution of employment status is observed by affiliated institution and gender, limited-term employment is high with the young age group in university/technical college. However, the number begins to drop with males in their 40's. On the other hand, the number remains high for females even after age 40. In corporation and government, limited-term employment is high with males in their 60's and above.

In the employment status by profession (excludes student respondents), there was a remarkably high ratio of limited-term employment with life science/biology and medicine/dentistry/pharmacology fields for both genders.

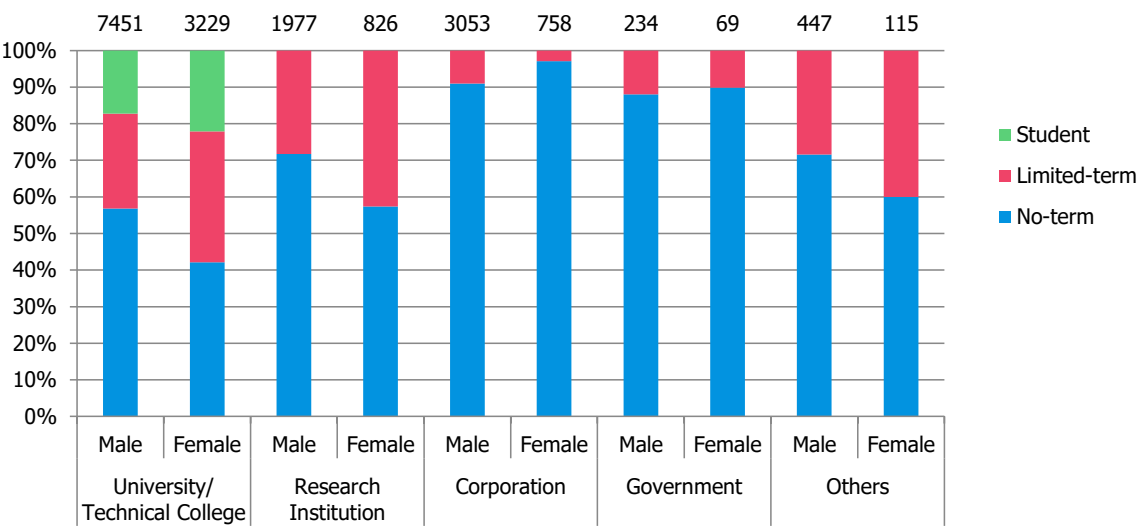
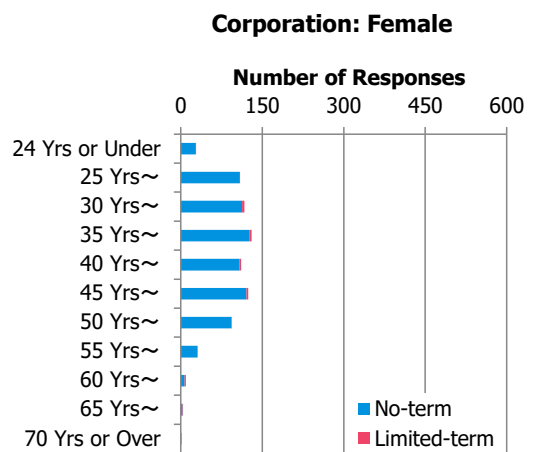
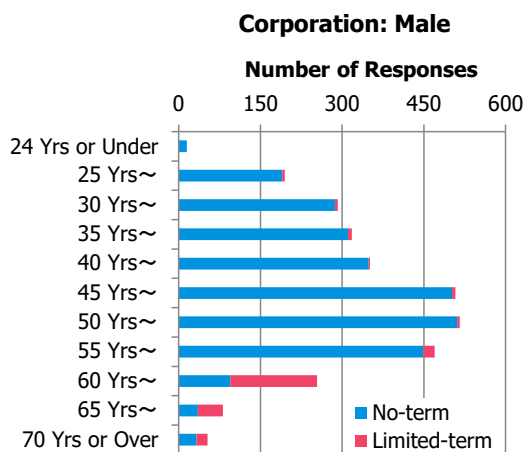
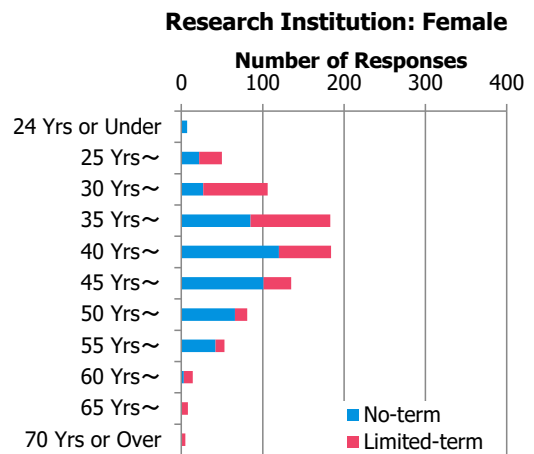
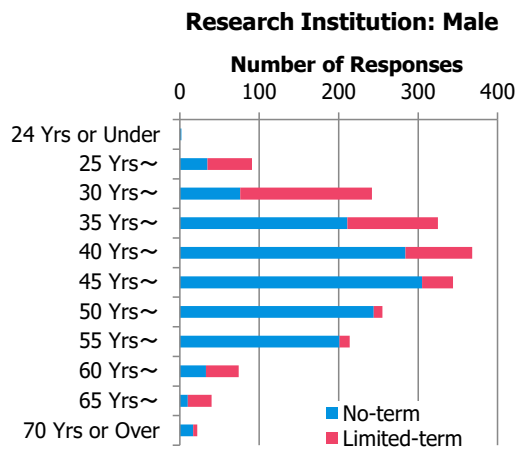
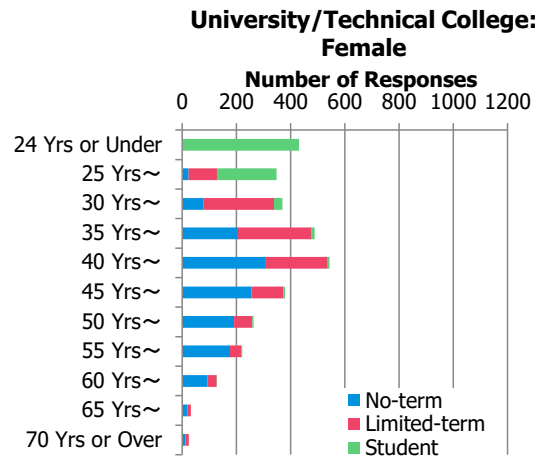
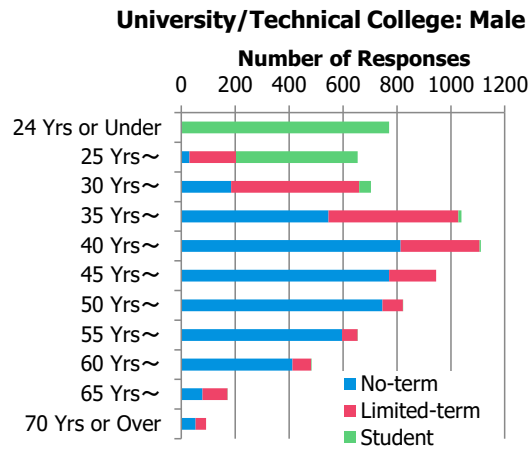


Figure 1.23 Employment Status by Institution (Single Answer)



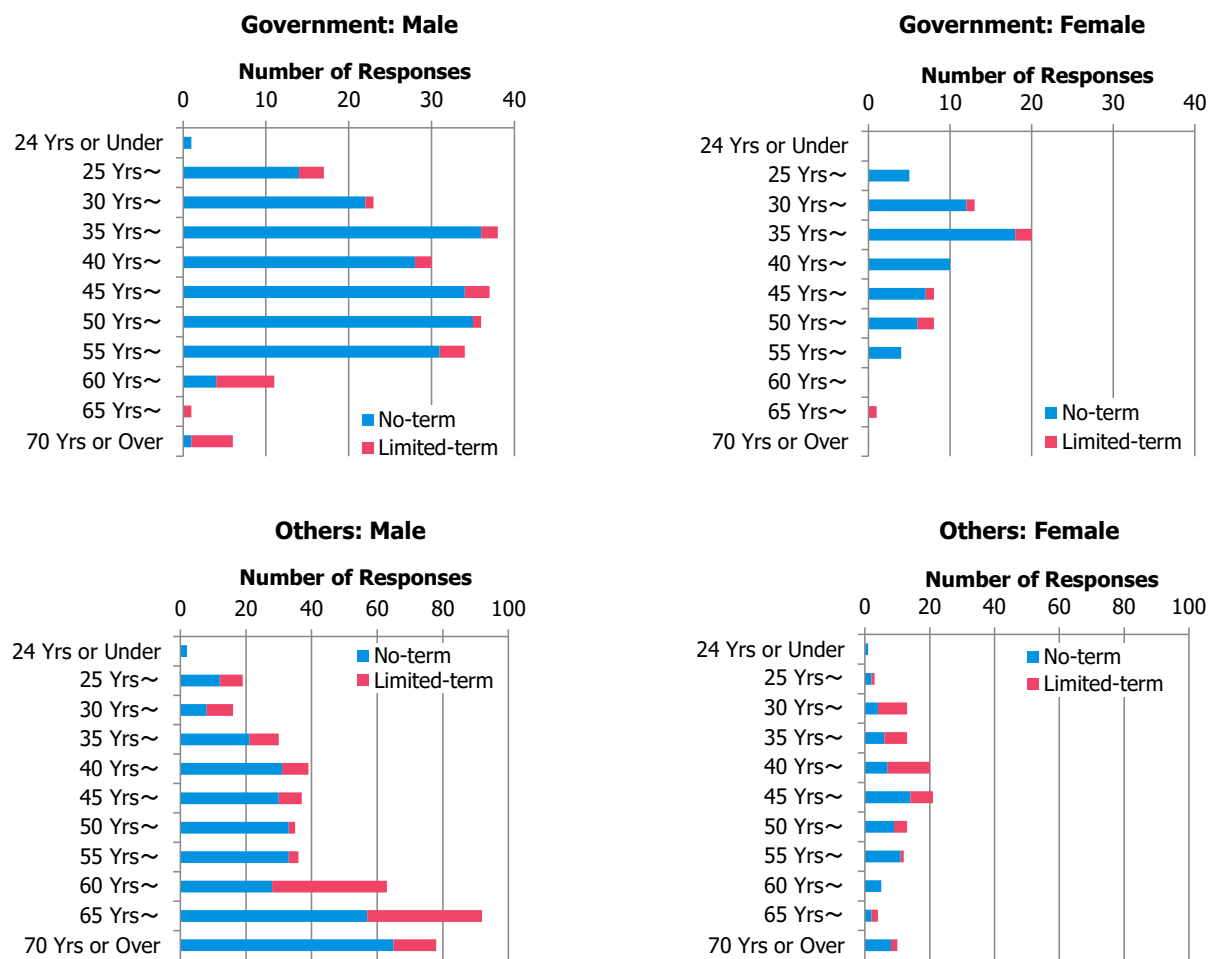


Figure 1.24 Employment Status by Age Group for Each Institution (Single Answer)

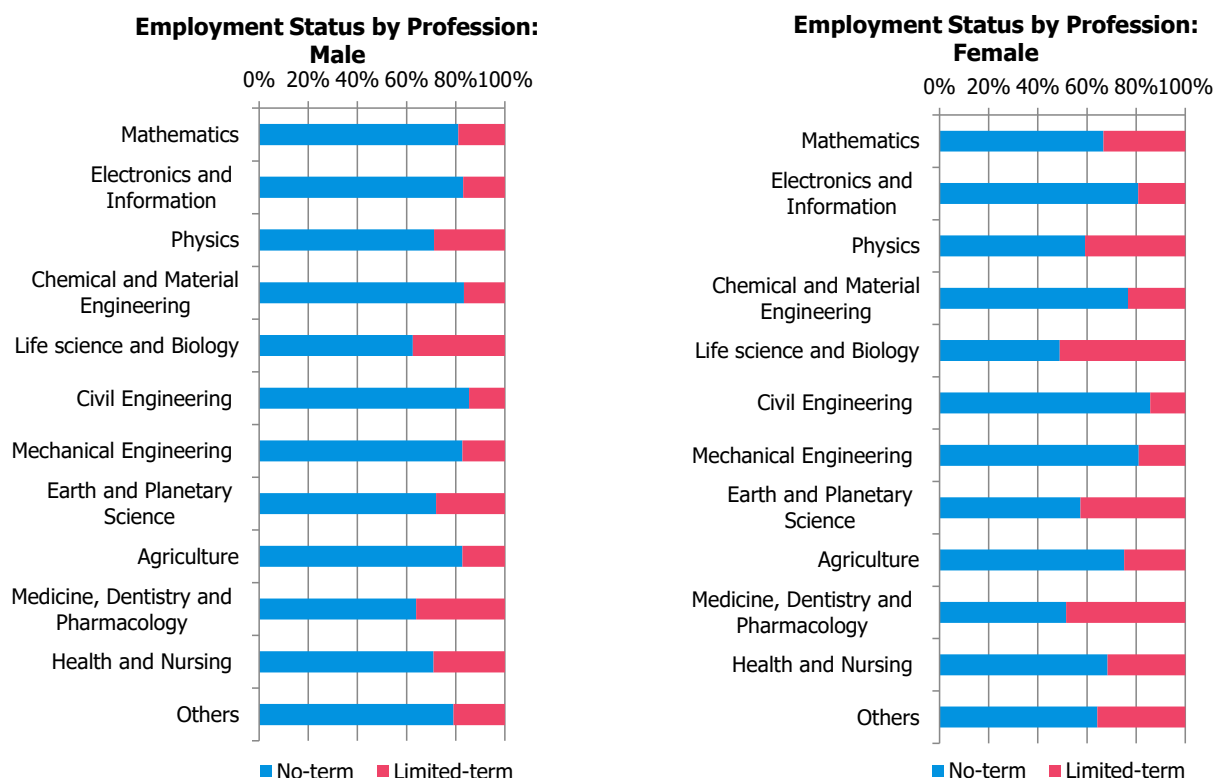


Figure 1.25 Employment Status by Profession (Single Answer)

Limited-term Employment (Questions 11, 12; Figures 1.26-39)

Of the respondents currently under limited-term employment, those with a “6 to 10 year” term were the highest for both genders. However, females had a slightly higher ratio of long-term employment, and females had a higher number of respondents that changed affiliation numerous times.

Those respondents under limited-term employment totaling more than 10 years was 20% overall, but females had a higher ratio and an increase of ten points since the third survey. The ratio of those under a contracted working time of 40 hours or more was slightly higher for males.

The length of the limited-term employment did not vary much by profession.

About 80% of males and females under limited-term employment were enrolled in both health and pension plans, but the percentage of non-participants was slightly higher for females.

About 50% of males and females are eligible to take childcare leave with the females having a slightly higher eligibility ratio. However, the percentage of ineligible females is high, and that the percentage exceeds 20% is a problem.

Males and females under tenure track employment were about 10%. Furthermore, about 80% of both genders desire no-term employment.

Even among respondents currently under no-term employment, those that experienced limited-term employment are not few. As for the number of affiliation changes, “once” received the highest response, but some have gone through several affiliation changes.

Experience with limited-term employment varied greatly with profession, and there were professions in which more than half had experience. The number of affiliation changes was large in professions having high ratio of respondents with limited-term employment experience.

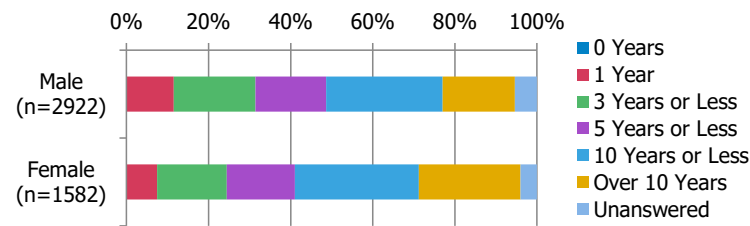


Figure 1.26 Term of Current Occupation (Limited-term Employment) (Single Answer)

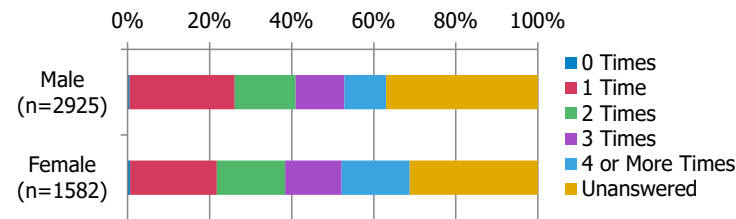


Figure 1.27 Affiliation Changes (Current: Limited-term Employment) (Single Answer)

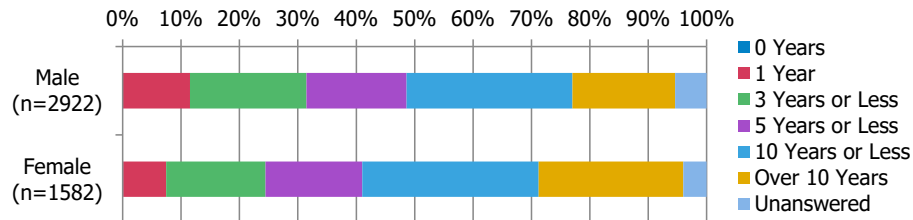


Figure 1.28 Total Years as Limited-term Employee (Single Answer)

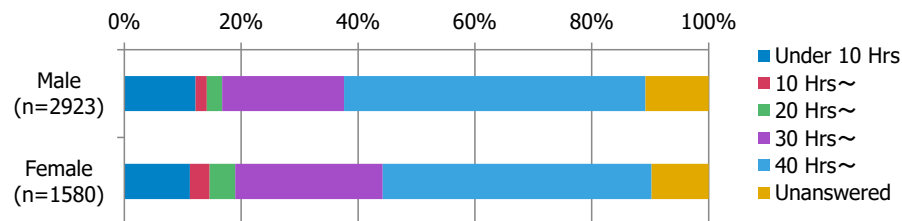


Figure 1.29 Contract Working Hours per Week (Single Answer)

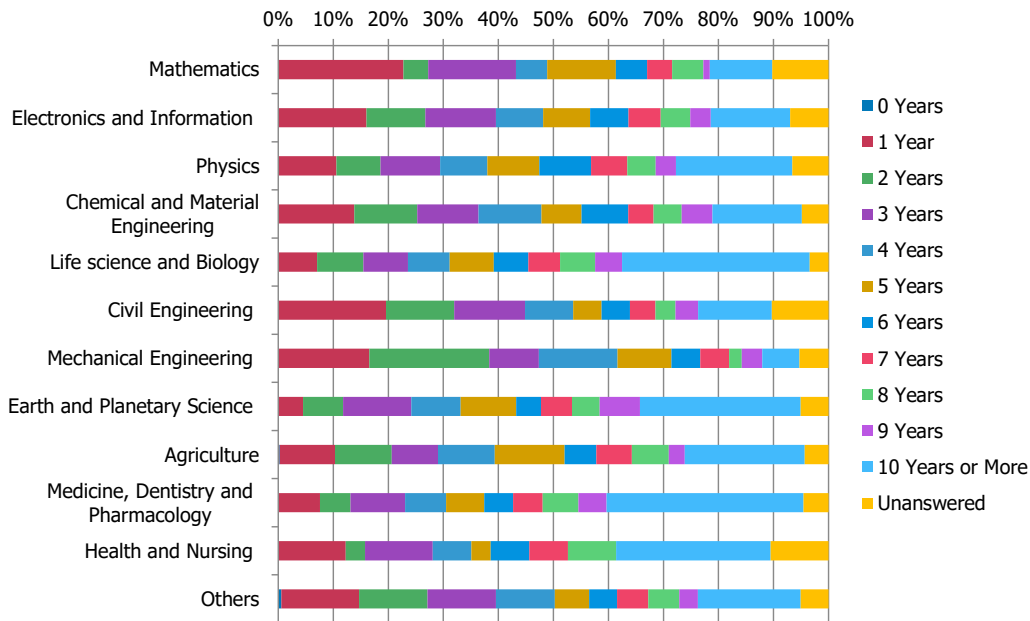


Figure 1.30 Length of Limited-term Employment by Profession (Single Answer)

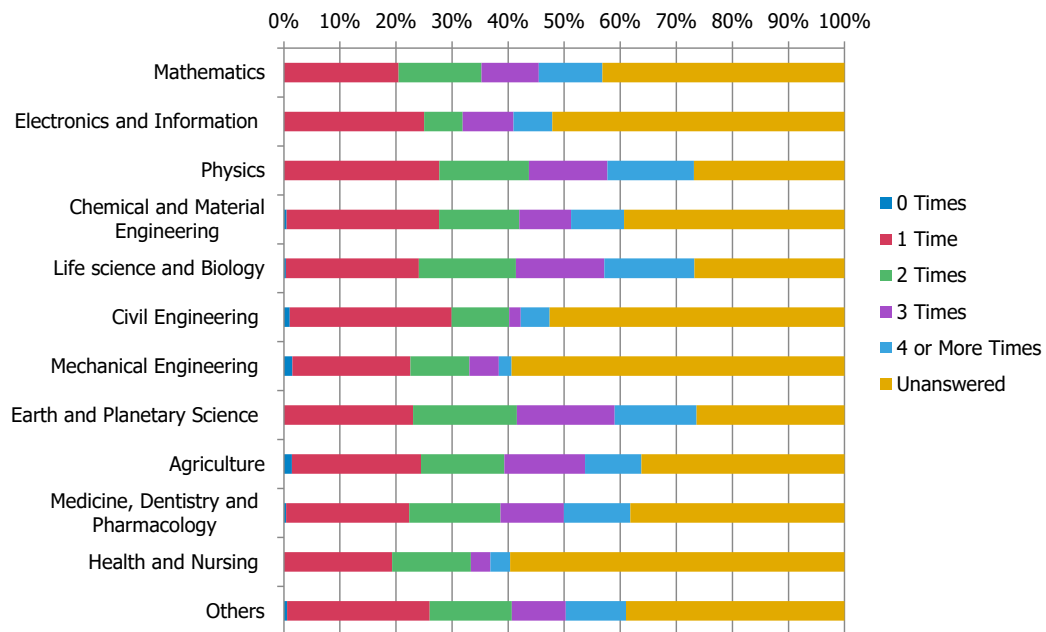


Figure 1.31 Affiliation Changes by Profession (Single Answer)

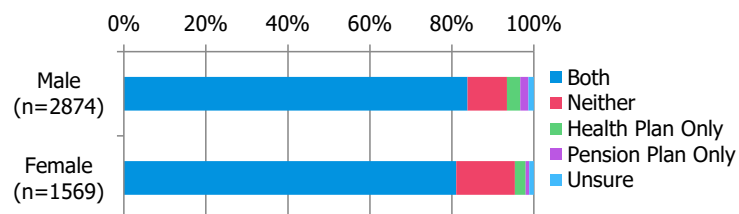


Figure 1.32 Social Security (Single Answer)

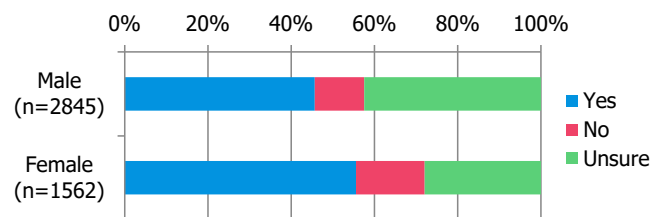


Figure 1.33 Provision for Childcare Leave (Single Answer)

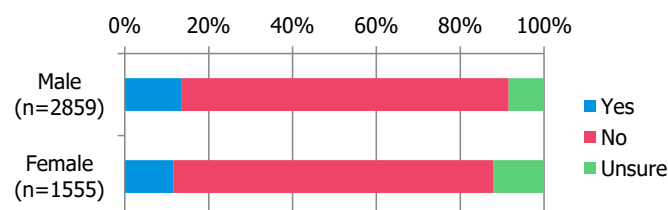


Figure 1.34 Tenure Track Job (Single Answer)

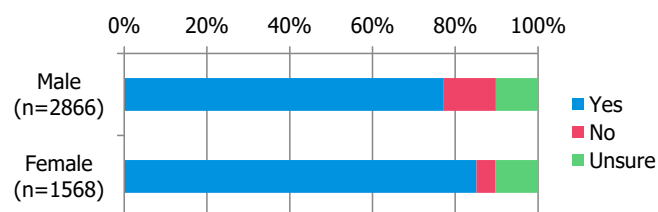


Figure 1.35 Desire for No-term Employment (Single Answer)

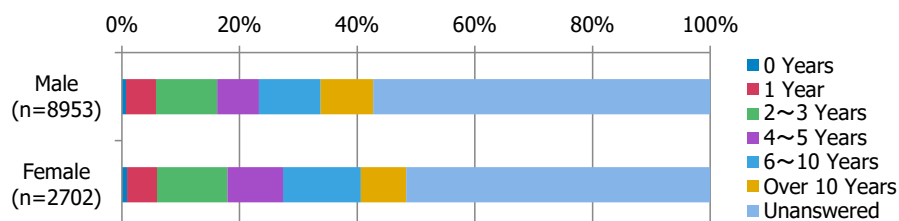


Figure 1.36 Length of Limited-term Employment (Current: No-term Employment) (Single Answer)

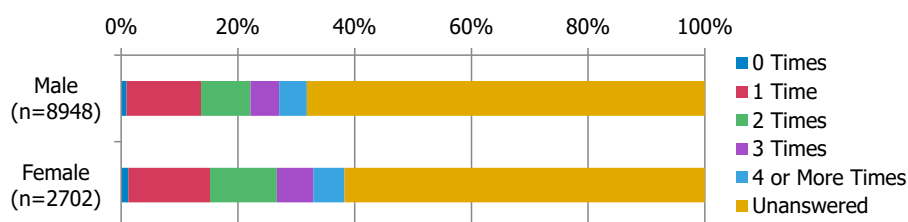


Figure 1.37 Affiliation Changes (Current: No-term Employment) (Single Answer)

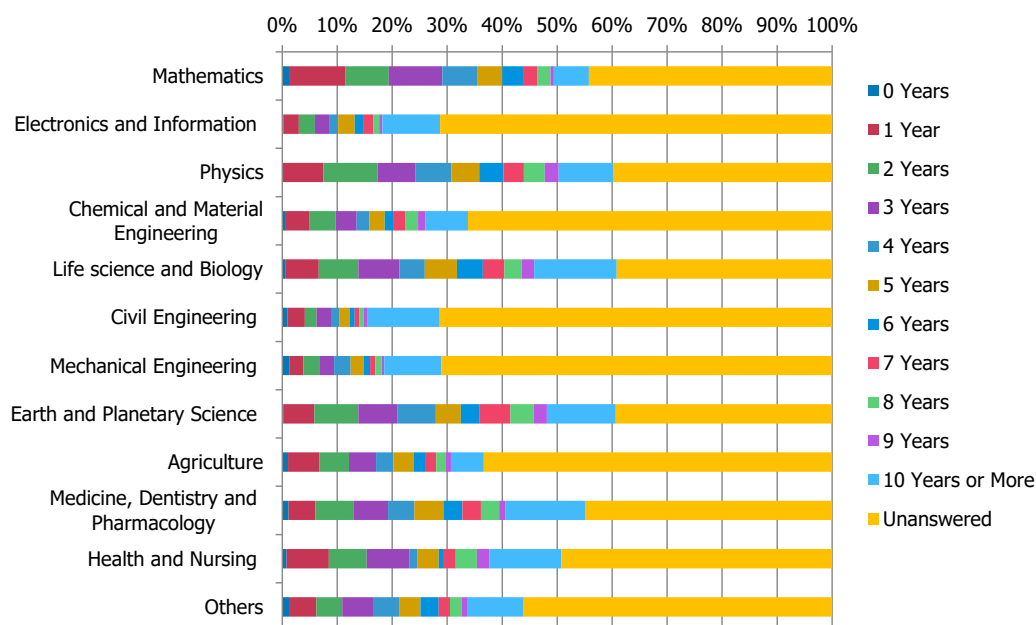


Figure 1.38 Length of Limited-term Employment by Profession (Current: No-term Employment) (Single Answer)

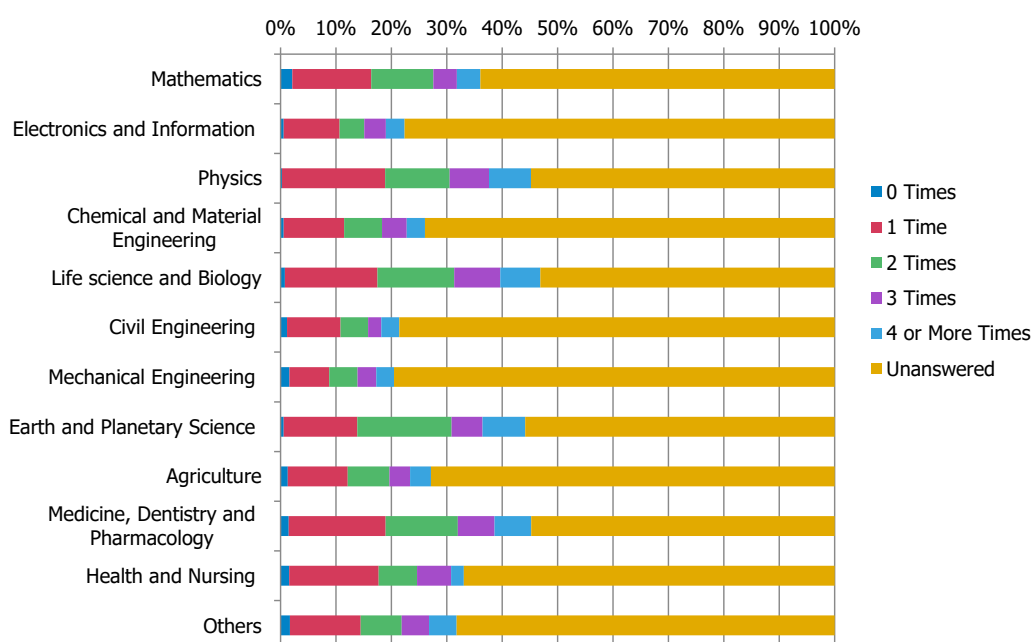


Figure 1.39 Affiliation Changes by Profession (Current: No-term Employment) (Single Answer)

Job Change/Relocation/Leaving a Job and Reasons (Questions 13, 14; Figures 1.40-43)

Males and females that have experienced job change, relocation or leaving a job exceeded 70%. Females by far have more experience leaving a job with more than double that of males. Looking at the number of job changes, there is no big difference between genders. However, nearly 40% has experienced changes multiple times and among those, half has repeated changes three or more times.

For both genders, the highest reason for job change, relocation or leaving a job was to further their careers. The

second highest reason for males was to change job content (including research topic) (36%) as opposed to reaching the term limit for females (35%). Other high reasons for females were marriage (8%), childcare (9%) and relocation of family member (8%). 3% cited gender discrimination.

Looking at each age group, females wanting to further their careers were somewhat more prevalent with the higher age groups while changes due to reaching the term limit were high for females in their 40's and younger.

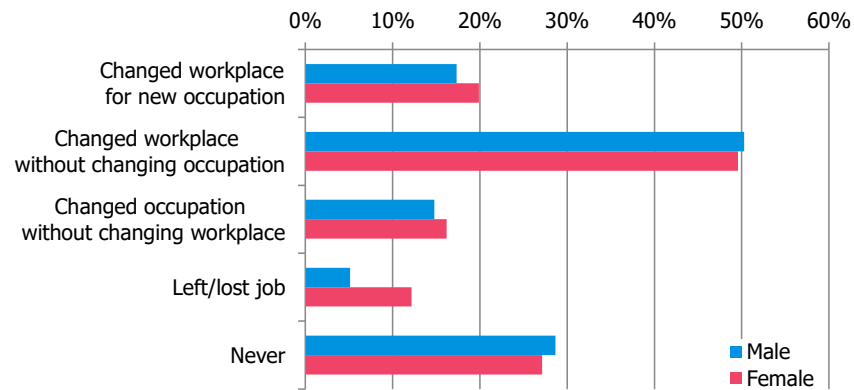


Figure 1.40 Experience with Job Change/Relocation/Quitting Job (Multiple Answers)

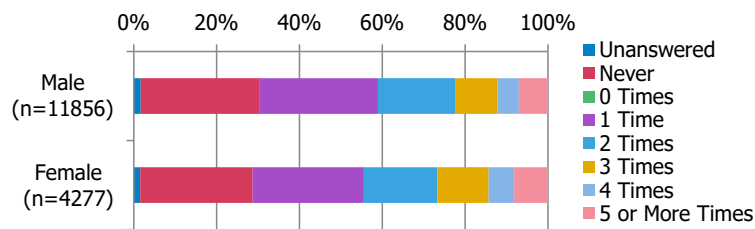


Figure 1.41 Number of Job Change/Relocation/Quitting Job (Single Answer)

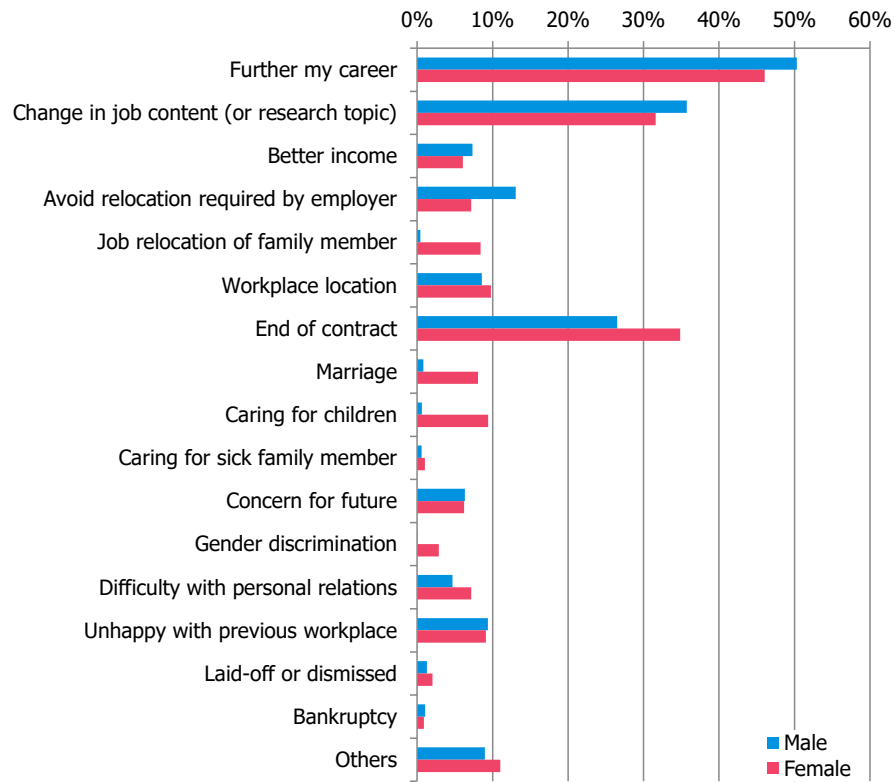


Figure 1.42 Reasons for Job Change/Relocation/Quitting Job (Multiple Answers)

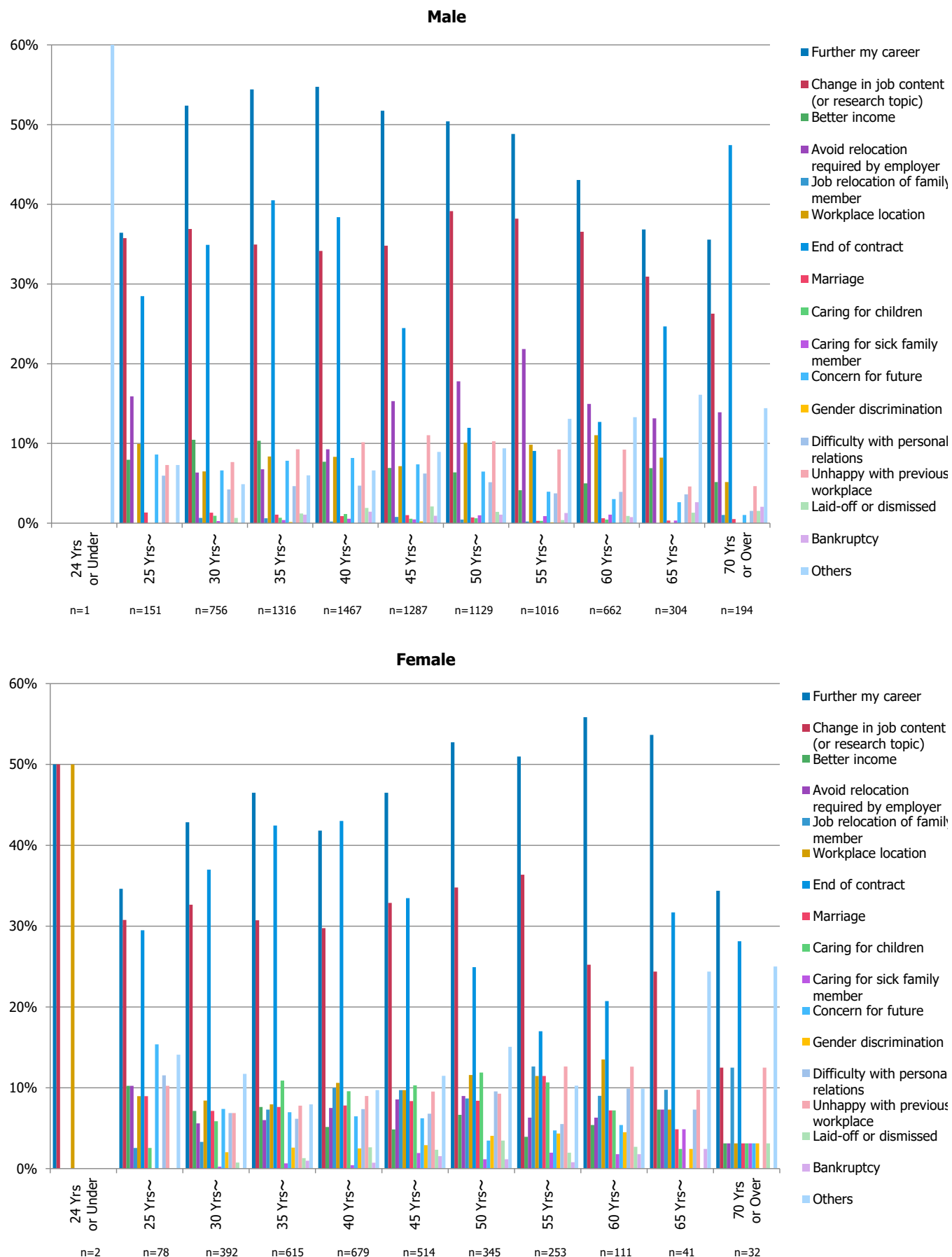


Figure 1.43 Reasons for Job Change/Quitting Job by Age Group (Multiple Answers)

Working Hours (Questions 15, 16; Figures 1.44-51)

Hours spent per week at the workplace by gender peaks from 40 hours to around 60 hours with the males shifting slightly toward the longer hours. Hours spent on R&D at the workplace were evenly distributed.

By gender, the graph of female workplace hours reaches the bottom of a valley between the “30 to 45 years” range. For both genders, workplace hours drastically drop beyond age 65. However, the workplace hours for females reaches a peak between the “60 to 65 years” range. On the other hand, hours spent on R&D at the workplace drop as age increases for both genders.

Looking at the average hours spent per week working at home by age group, there is an upward trend as age increases, and a sharp rise after age 65.

Although workplace hours for males in the medicine/dentistry/pharmacology profession is long, workplace hours are decreasing overall. Hours spent working at home by profession is generally opposite of workplace hours.

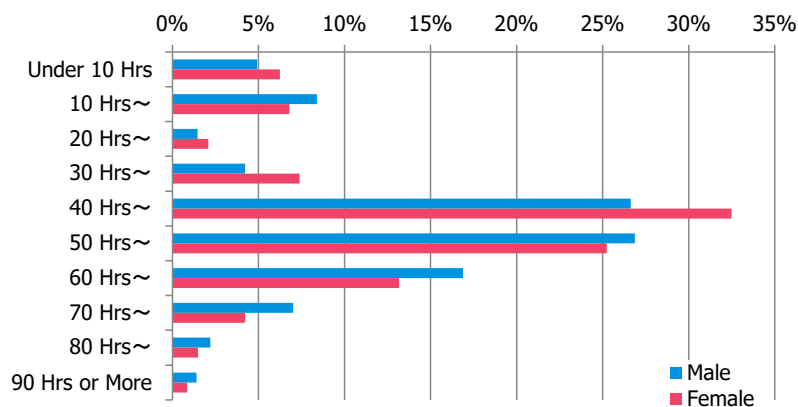


Figure 1.44 Hours Spent at Workplace per Week (Single Answer)

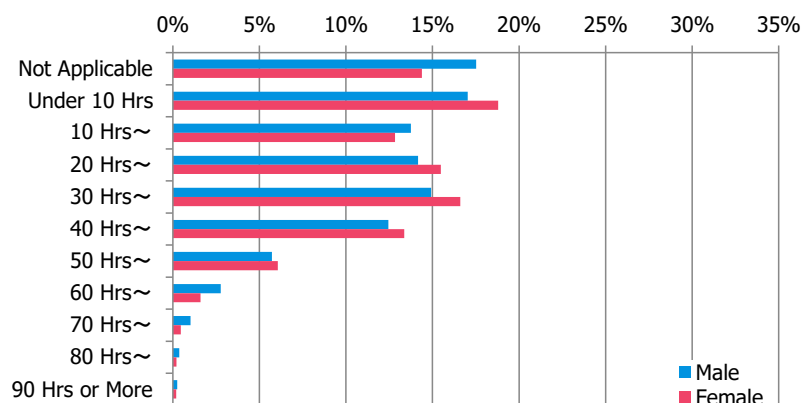


Figure 1.45 Hours Spent in R&D per Week (Single Answer)

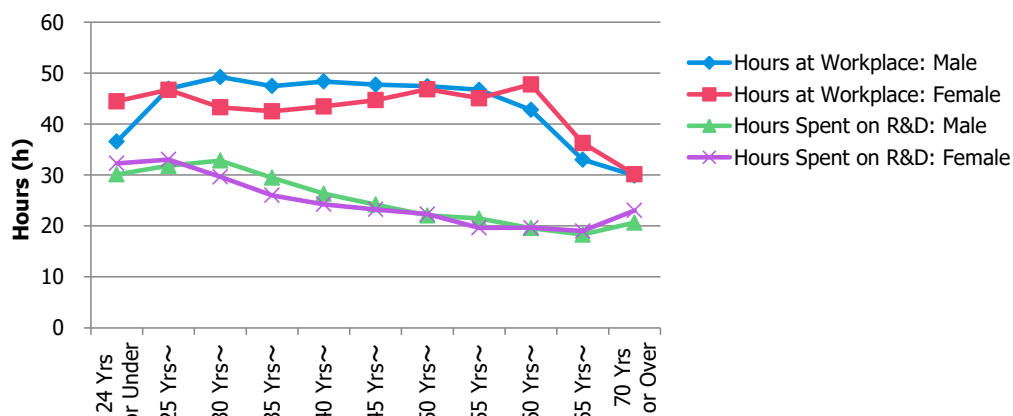


Figure 1.46 Hours Spent at Workplace per Week by Age Group (Single Answer)

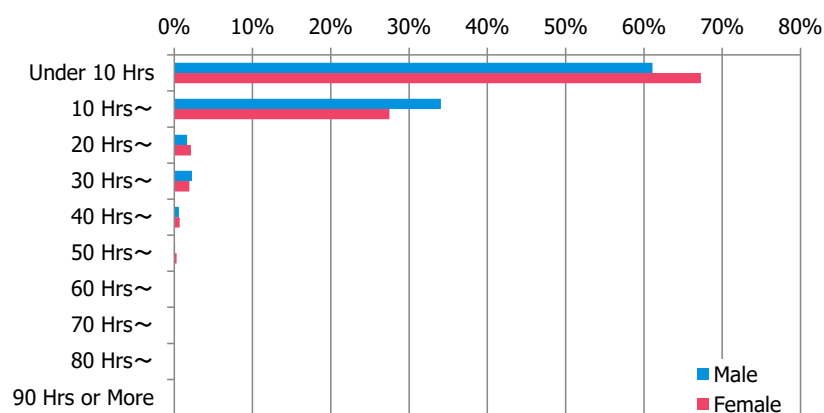


Figure 1.47 Hours Spent Working at Home per Week (Single Answer)

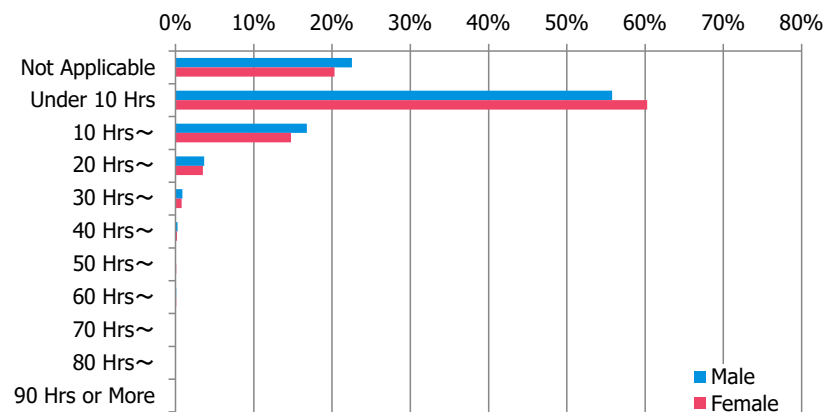


Figure 1.48 Hours Spent in R&D at Home per Week (Single Answer)

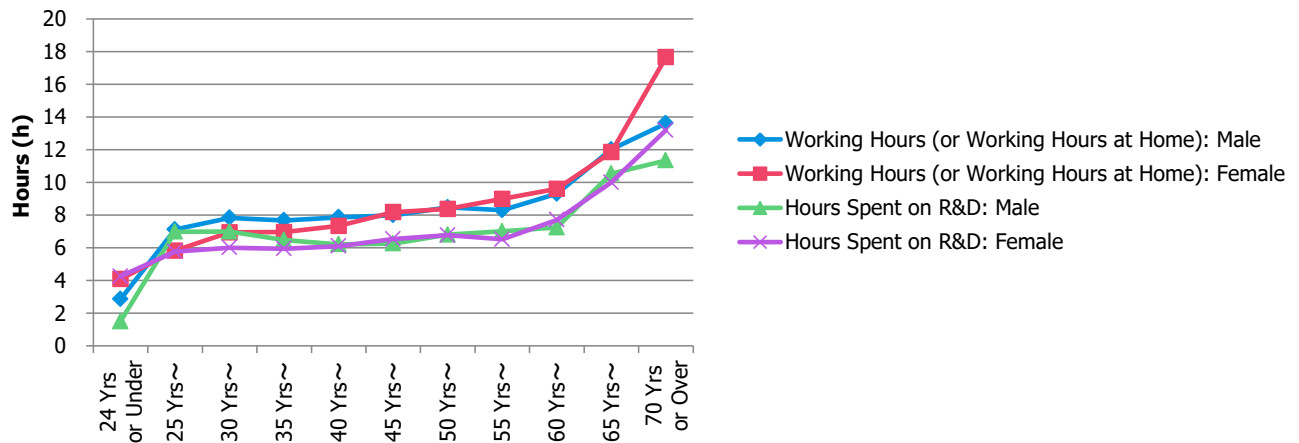


Figure 1.49 Hours Spent Working at Home per Week by Age Group (Single Answer)

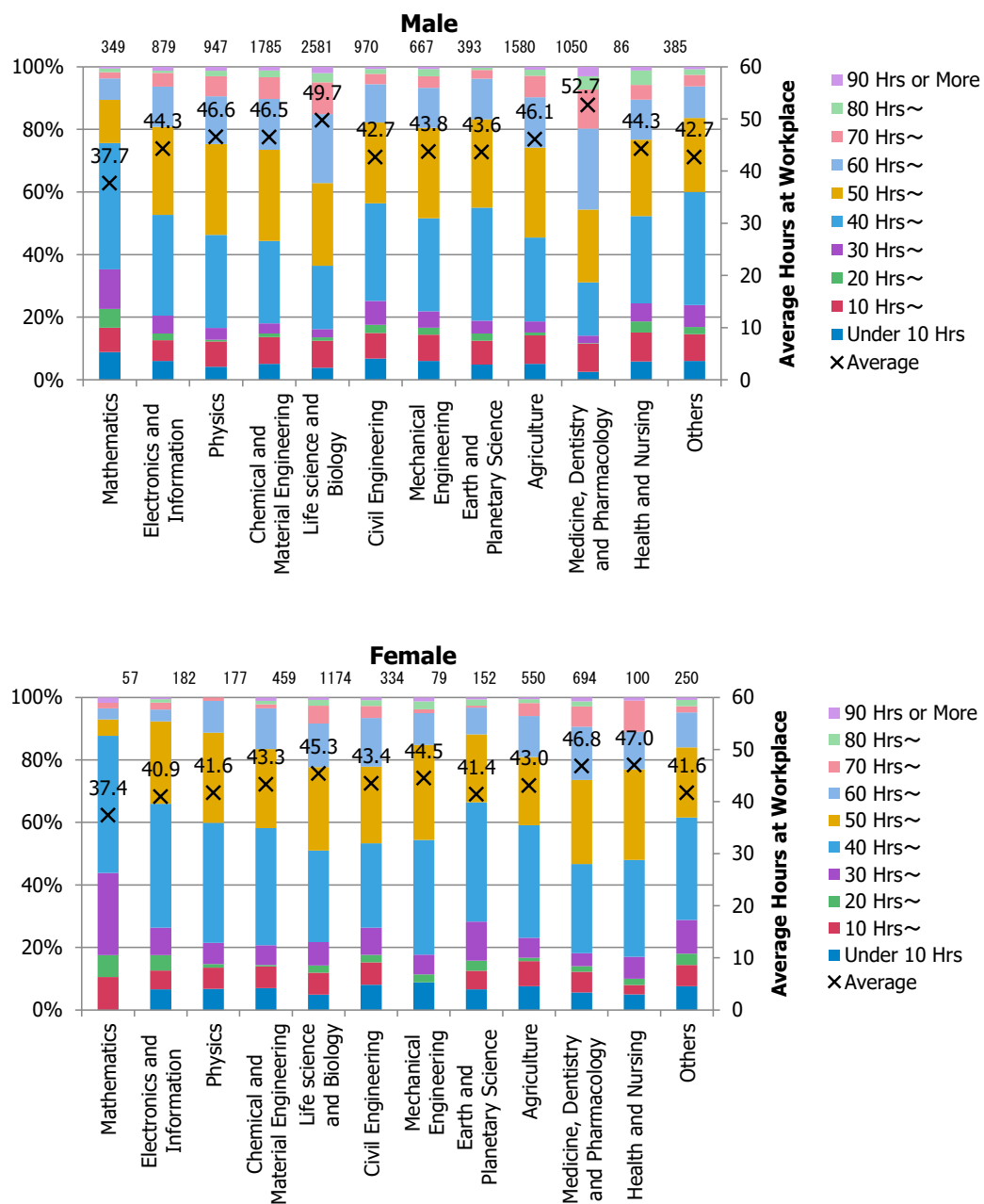


Figure 1.50 Hours Spent at Workplace per Week by Profession (Single Answer)

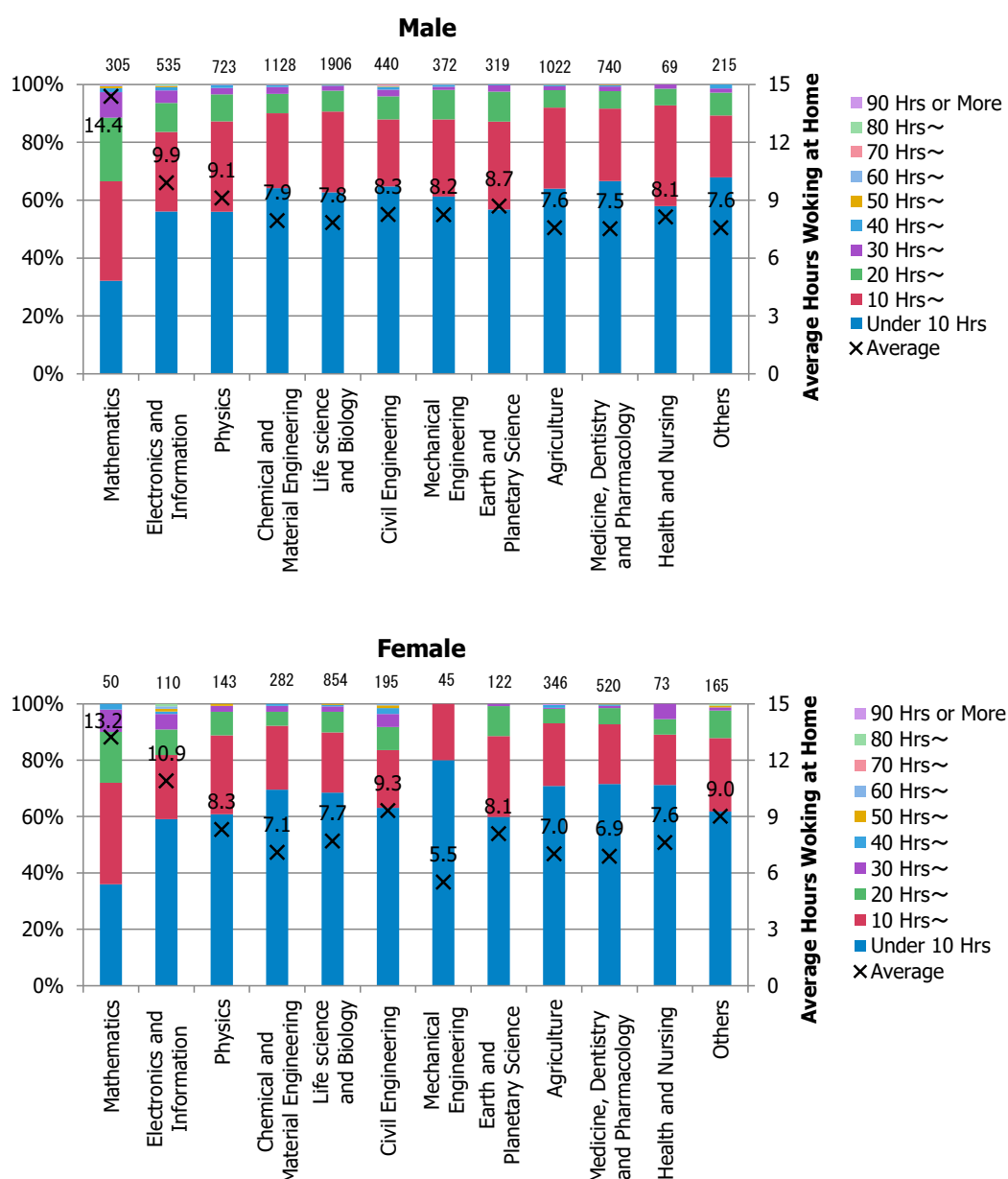


Figure 1.51 Hours Spent Working at Home per Week by Profession (Single Answer)

Career Goals (Question 17; Figures 1.52-54)

For both males and females, the desire for a R&D job was overwhelming, and most respondents desired research positions at universities and research institutions. Males were more likely than females to desire supervising laboratories or R&D.

By occupational field, there was no big difference in the tendency for both genders to desire research work at universities.

The respondents' desire for research work at a university depends considerably on their profession. For both genders, fields in which the desire exceeded 50% were basic research and medicine.

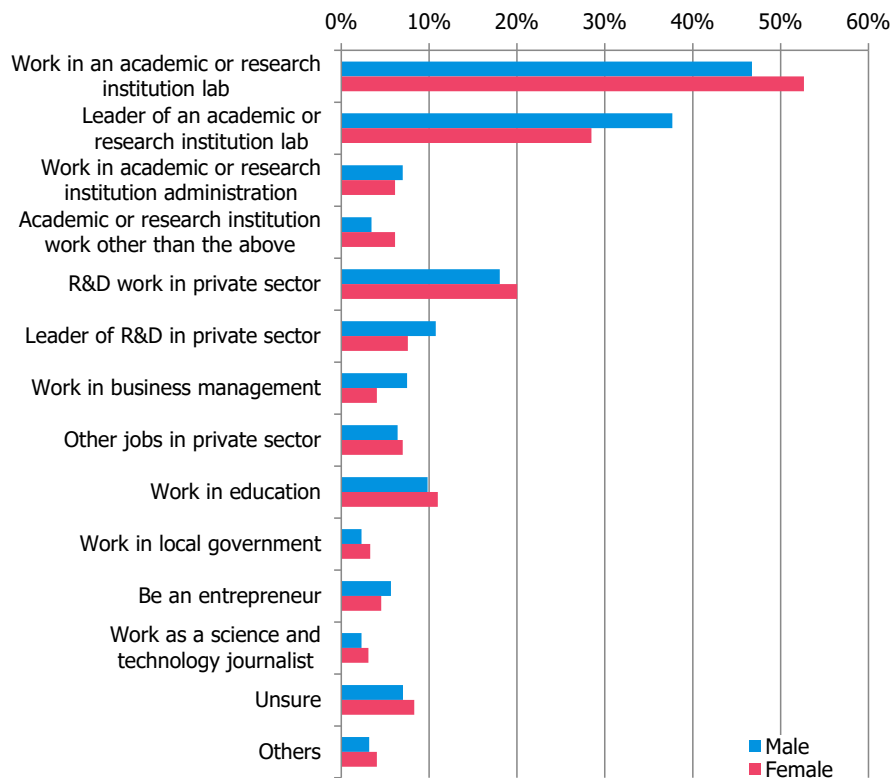
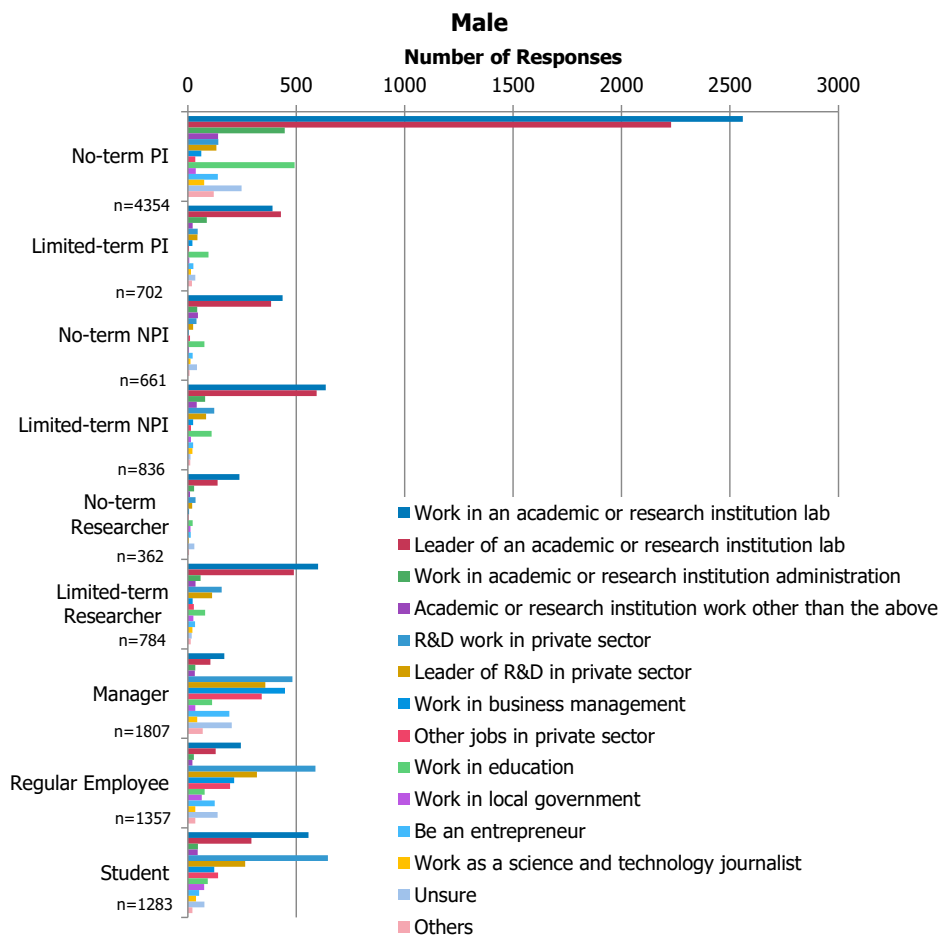


Figure 1.52 Career Goals by Gender (Multiple Answers)



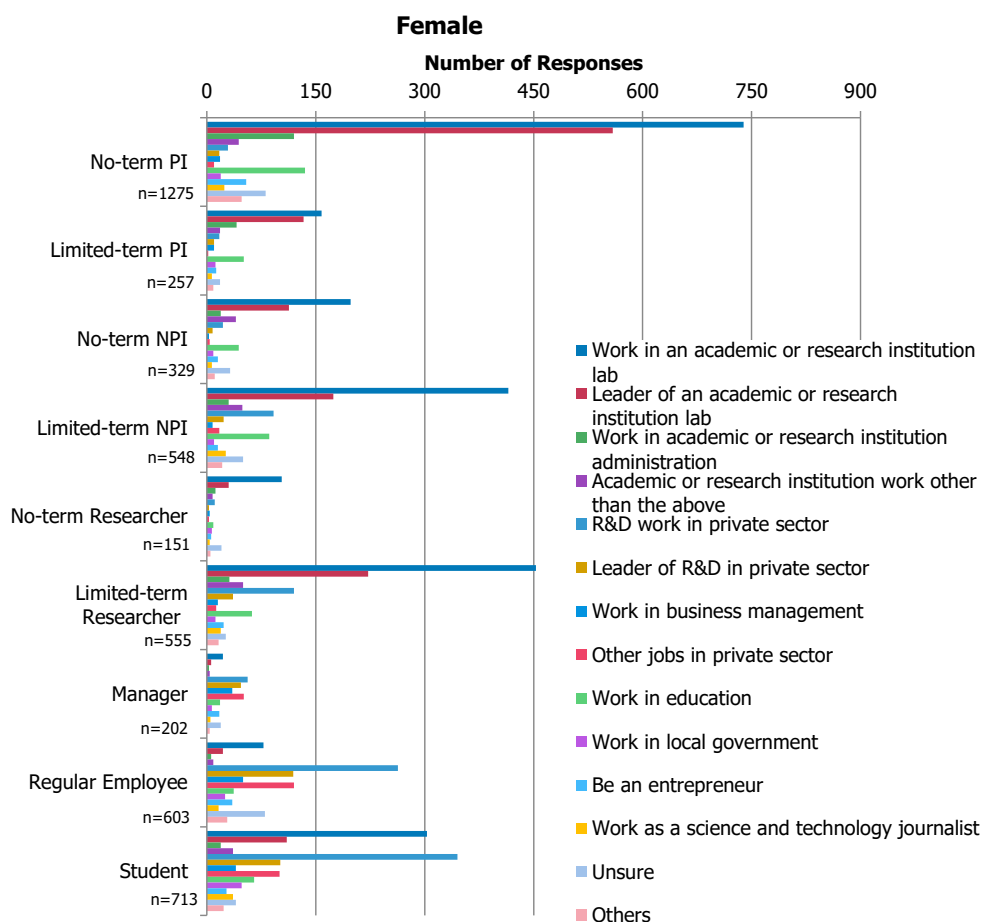
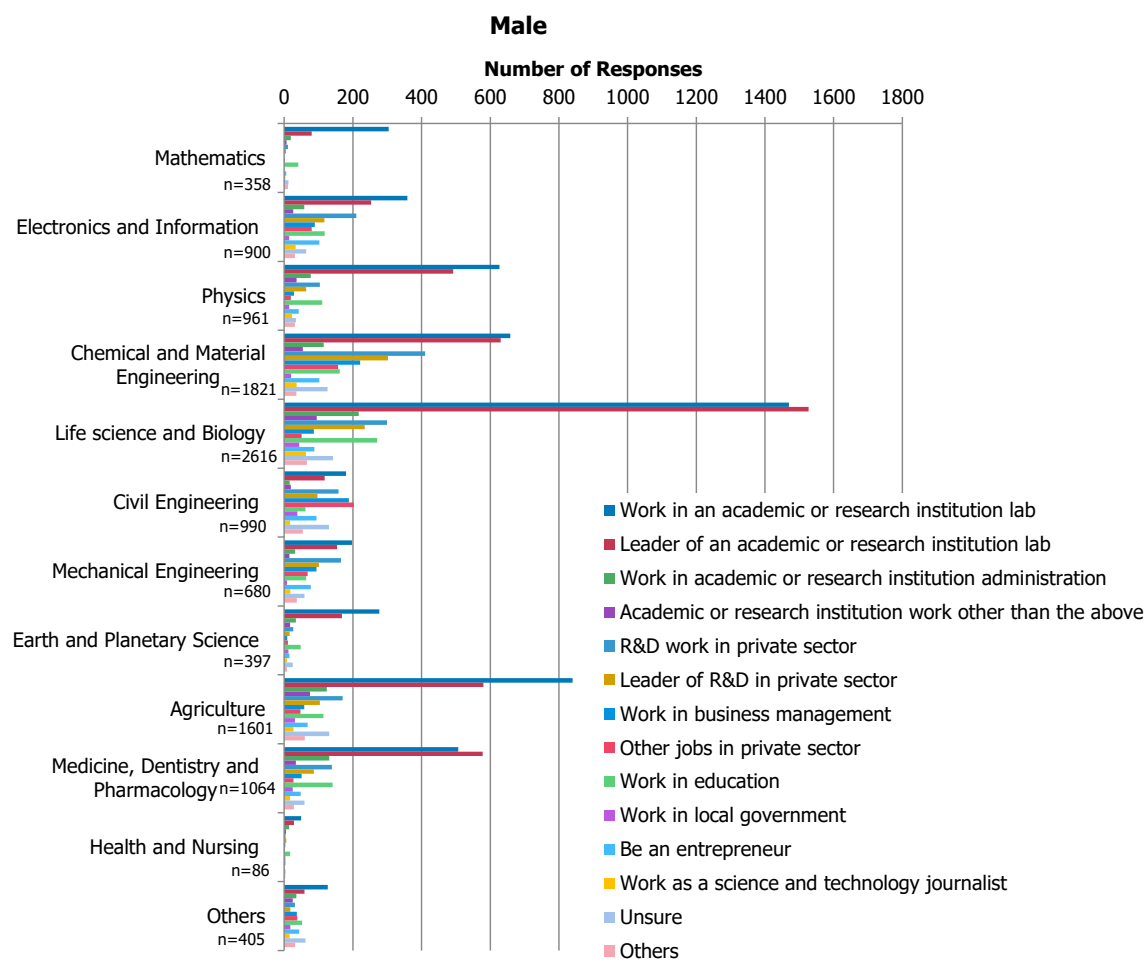


Figure 1.53 Career Goals by Occupational Field (Multiple Answers) Male/Female



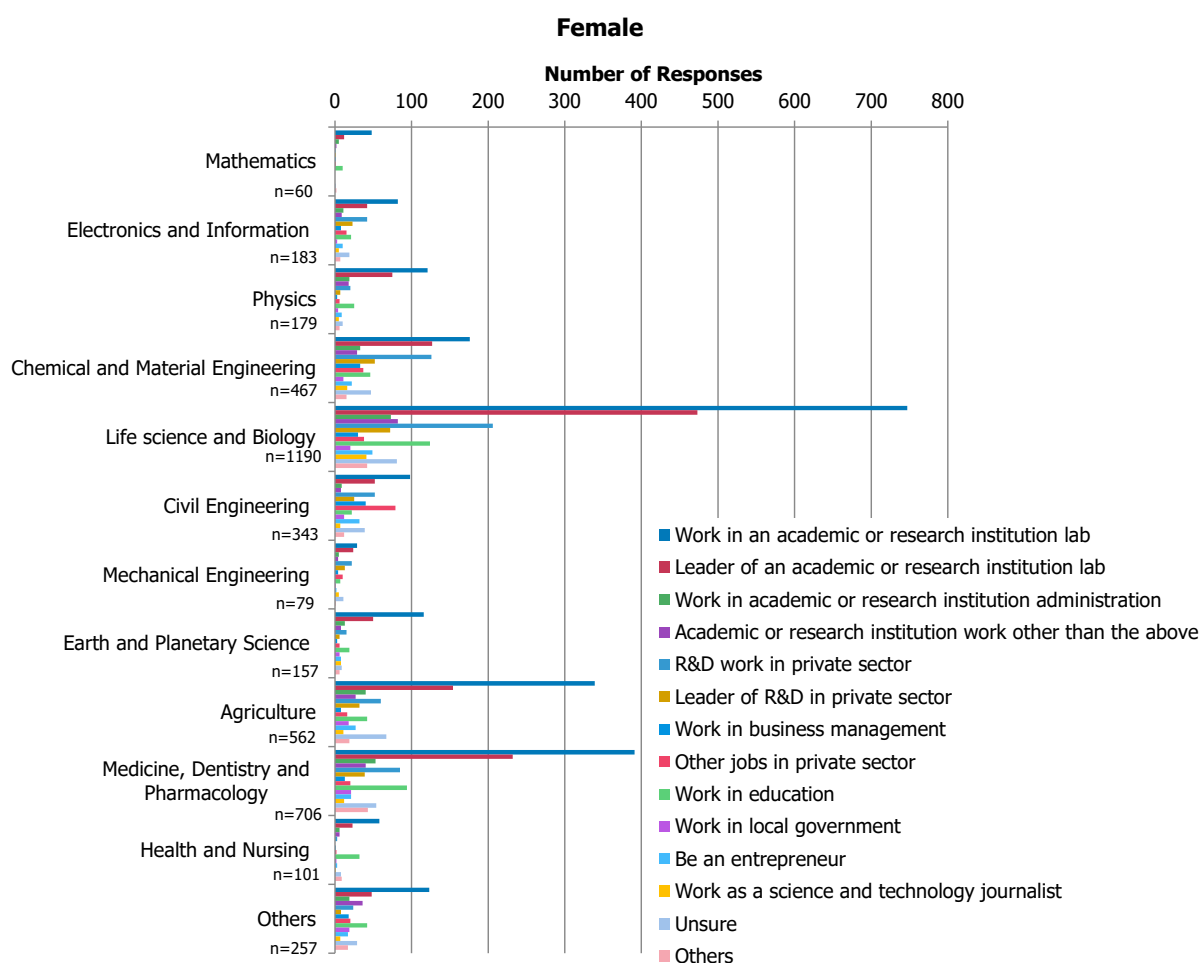


Figure 1.54 Career Goals by Profession (Multiple Answers) Male/Female

Overseas Research Activities (Question 18; Figures 1.55-56)

Over 70% of both genders believe overseas research activities would either have a “very positive” or “somewhat positive” impact on their career development. On the other hand, only about 30% of the respondents actually have research activity experiences overseas lasting six months or more with the males having a slight edge over the females.

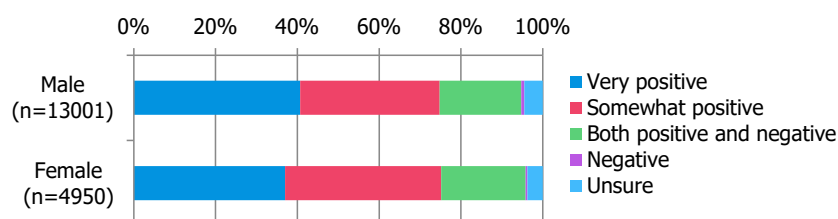


Figure 1.55 Impact of Overseas Activities on Career Development (Single Answer)

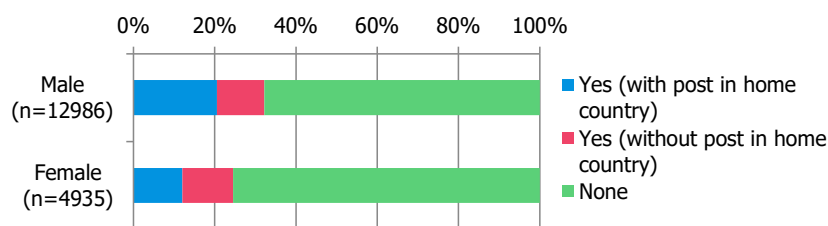


Figure 1.56 Experience with Overseas Research Activities Lasting Over 6 Months (Single Answer)

Postdoctoral Position and Career Development (Question 19; Figures 1.57-59)

Many respondents think postdoctoral position is beneficial since they “can concentrate on research” and provides them with “opportunities to undertake new research”. 10% to 20% of respondents think there is no benefit.

As for problems with postdoctoral positions, many answered “few positions available after postdoctoral fellow” and “outlook is difficult since term is affected by research funding”.

Expanding full-time positions was cited as necessary for ensuring career path after working as a limited-term researcher.

Response for positions other than research jobs such as “expand professions involved with science and technology administration” was cited.

Detailed analysis regarding limited-term researchers are presented in Chapter 4.

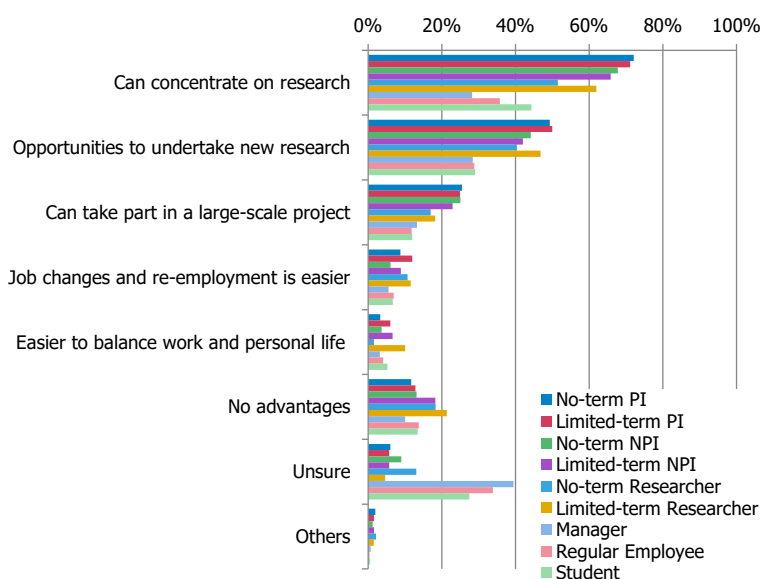


Figure 1.57 Benefits of Postdoctoral Position (Multiple Answers)

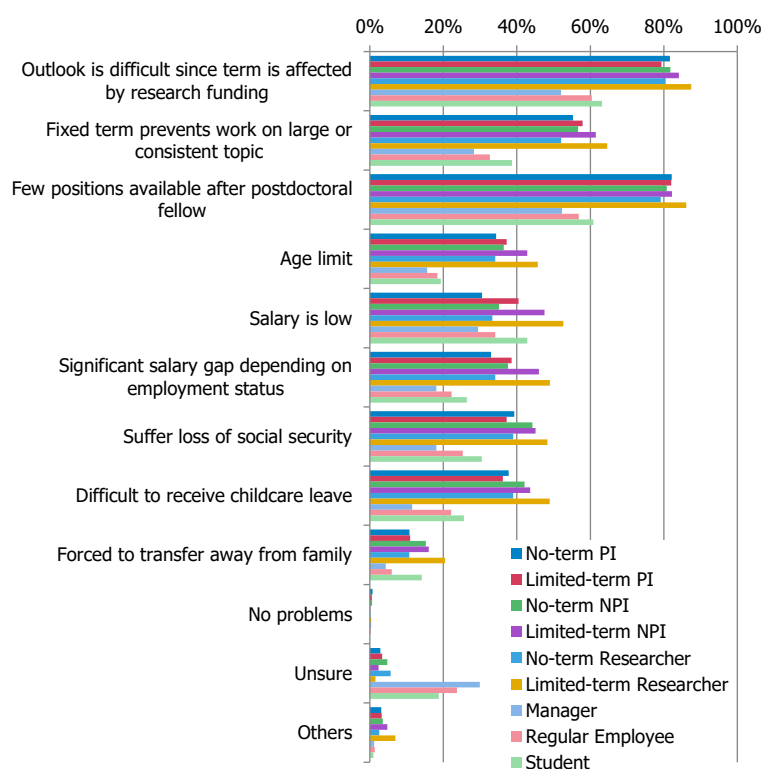


Figure 1.58 Problems with Postdoctoral Position (Multiple Answers)

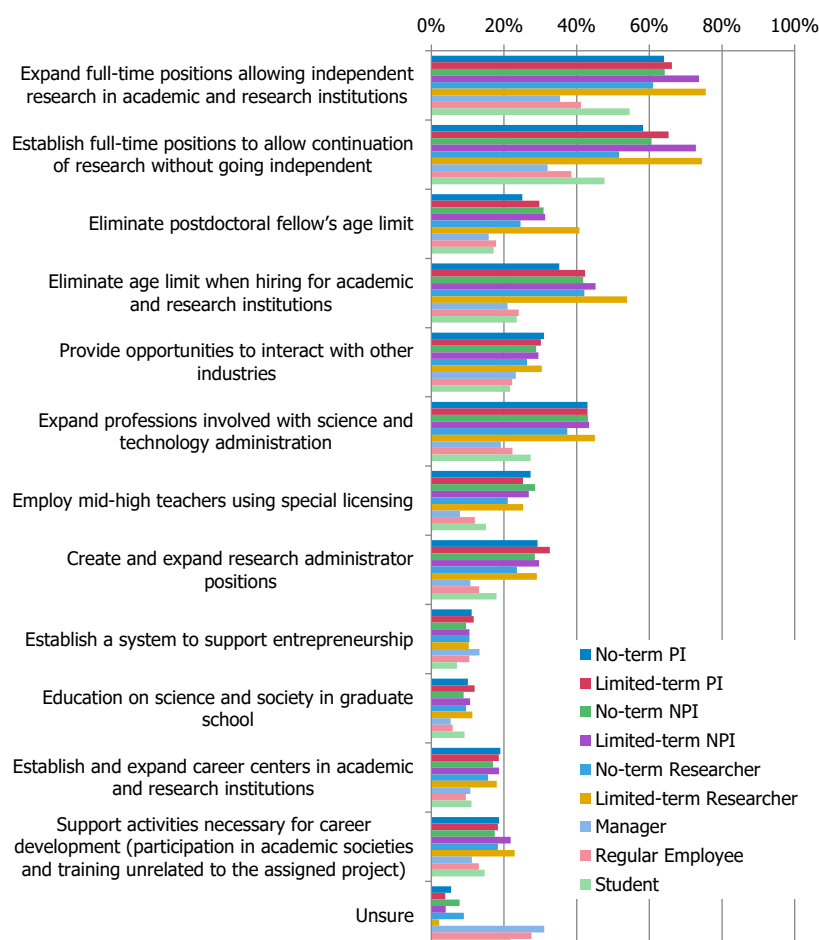


Figure 1.59 Securing Career Path After Postdoc (Multiple Answers)

1.3 Work and Family

Marital Status (Questions 20, 21, 22, 23; Figures 1.60-74)

For the younger age groups, there is almost no difference between genders in the ratio of respondents with spouses, but gender differences begin to appear starting in the late 30's.

More than half of the males' spouses are unemployed, but over 98% of females' spouses are employed.

Males have a higher ratio of spouses with limited-term employment.

About 28% of males and 50% of females have experience living separately from their spouses.

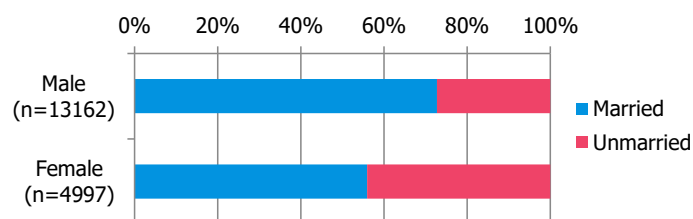


Figure 1.60 Marital Status (Single Answer)

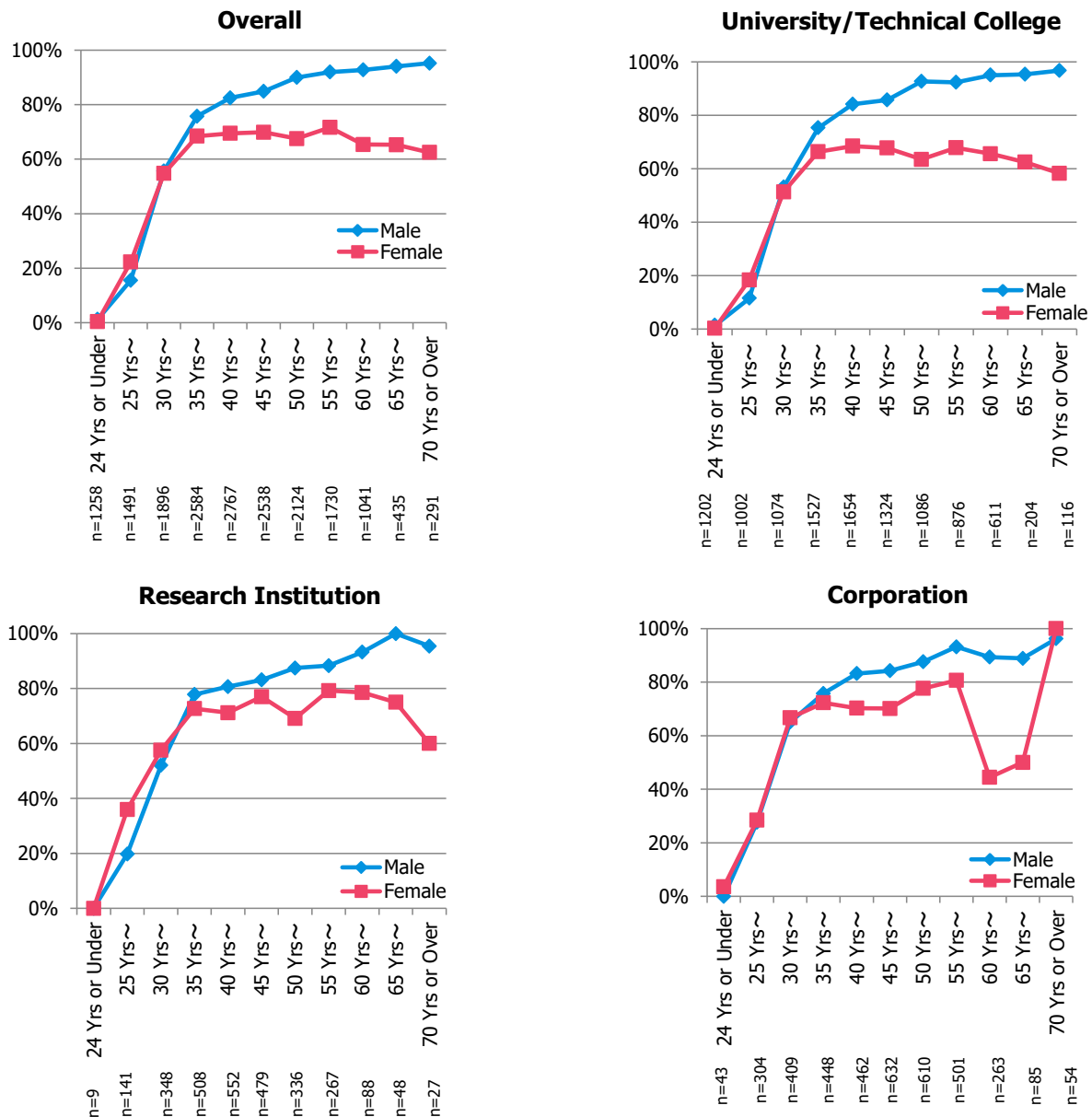


Figure 1.61 Marital Status by Age Group for Each Institution (Single Answer)

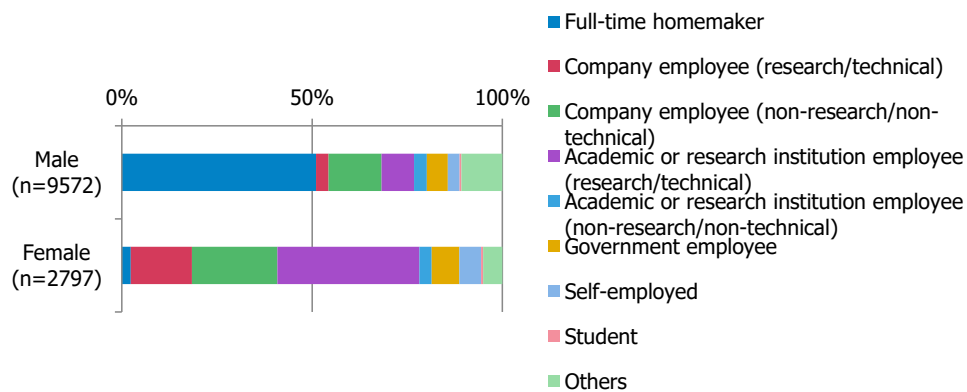


Figure 1.62 Spouse's Employment (Single Answer)

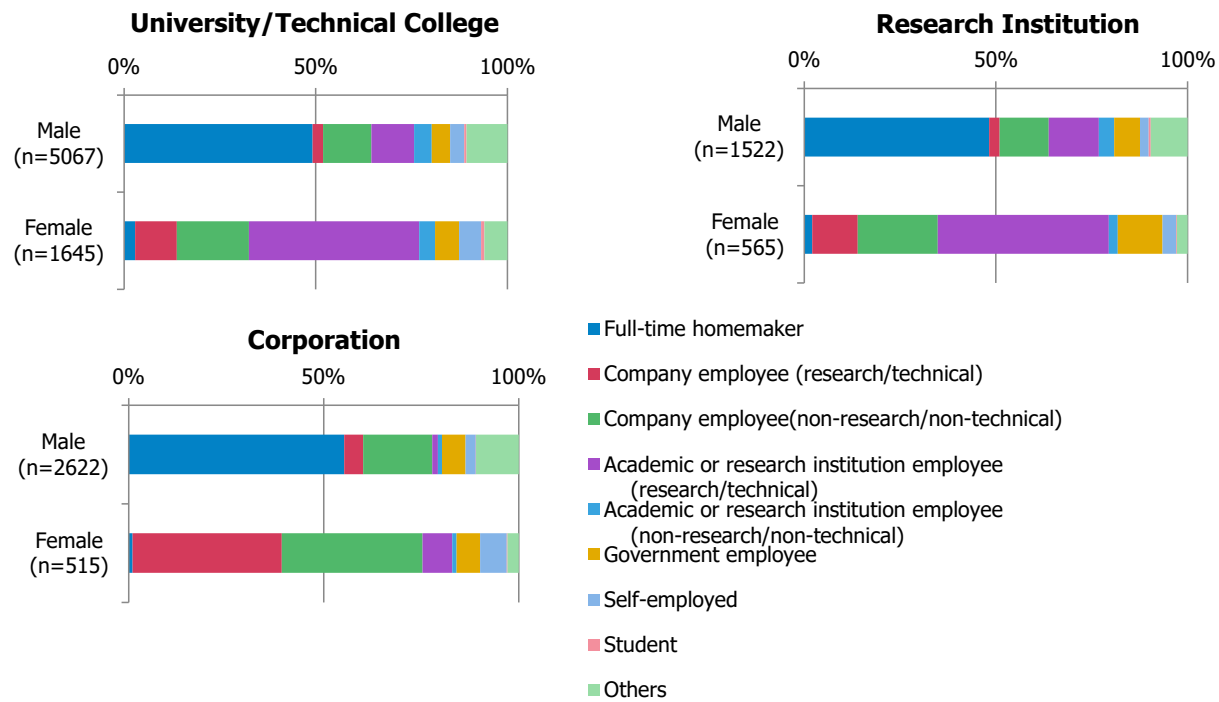


Figure 1.63 Spouse’s Employment by Institution (Single Answer)

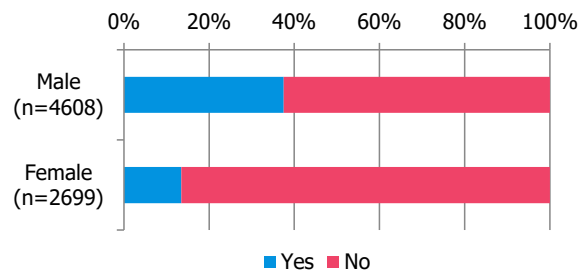


Figure 1.64 Term for Spouse’s Employment (Single Answer)

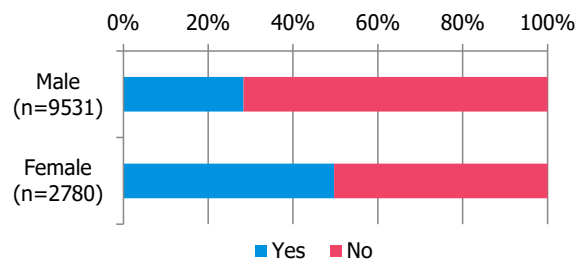


Figure 1.65 Experience Living Separately (Single Answer)

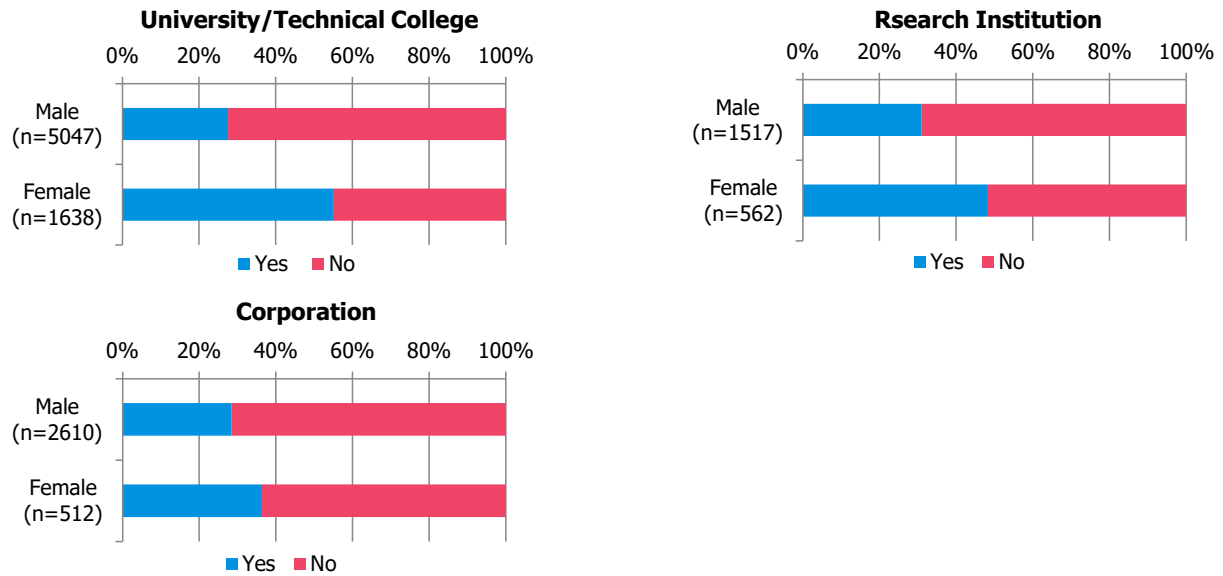


Figure 1.66 Experience Living Separately by Institution (Single Answer)

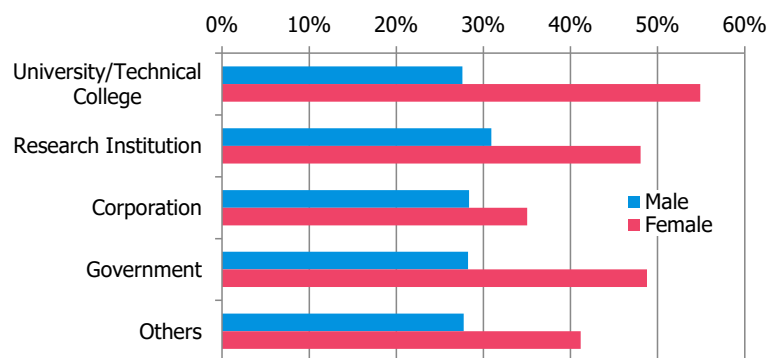


Figure 1.67 Percentage of Respondents with Separate Living Experience by Institution (Single Answer)

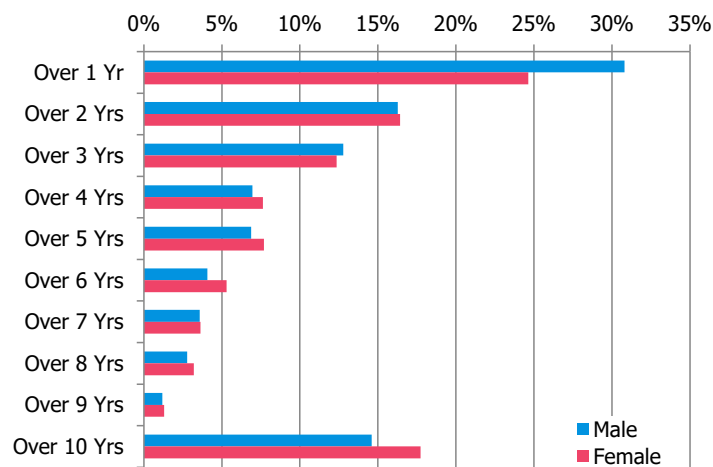


Figure 1.68 Years Spent Living Separately (Single Answer)

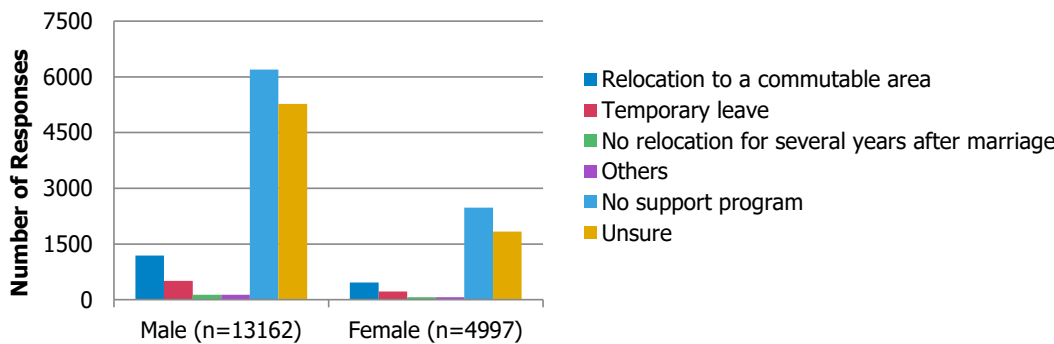


Figure 1.69 Dual Career Support Program (Multiple Answers)

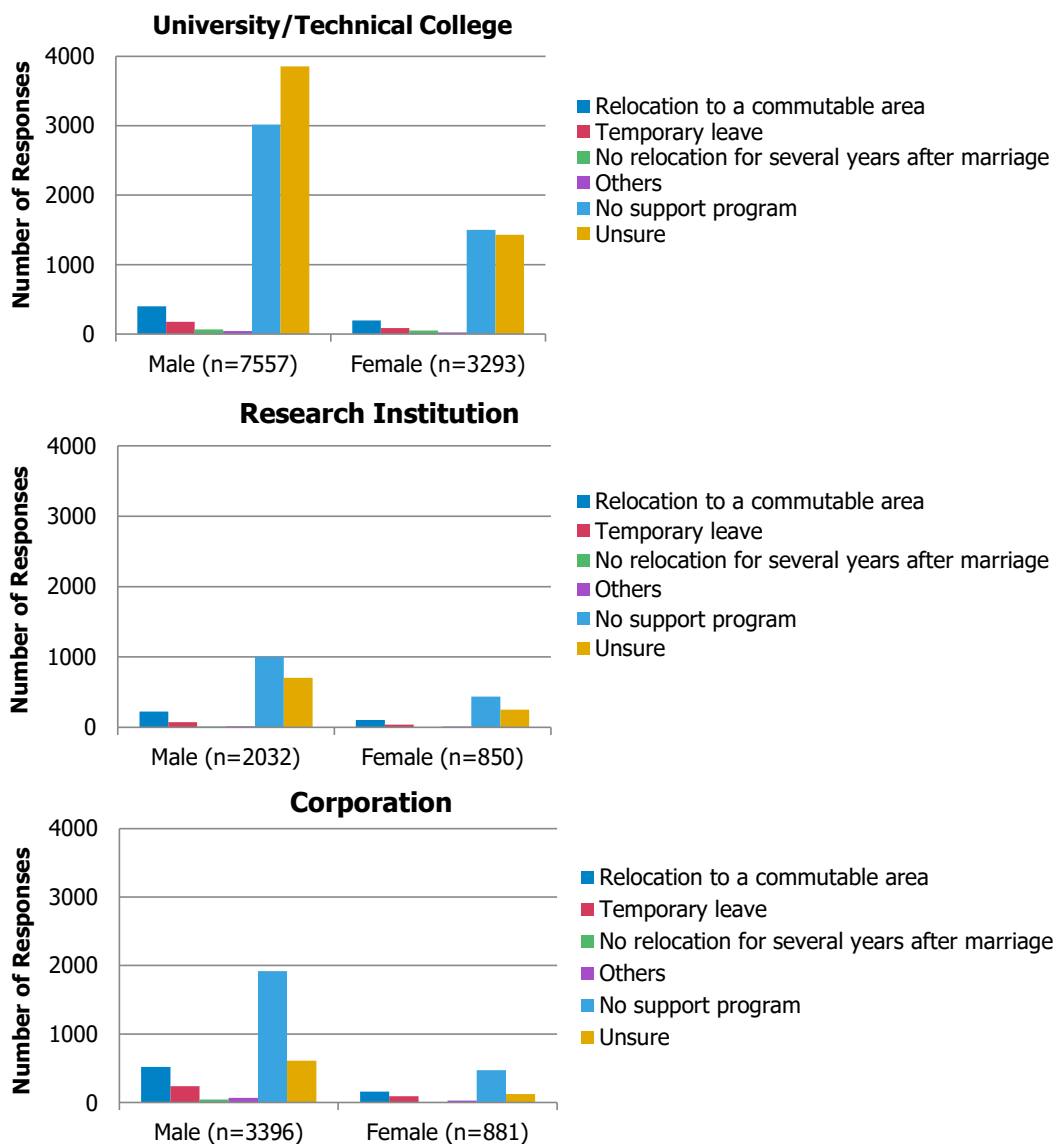


Figure 1.70 Dual Career Support Program by Institution (Multiple Answers)

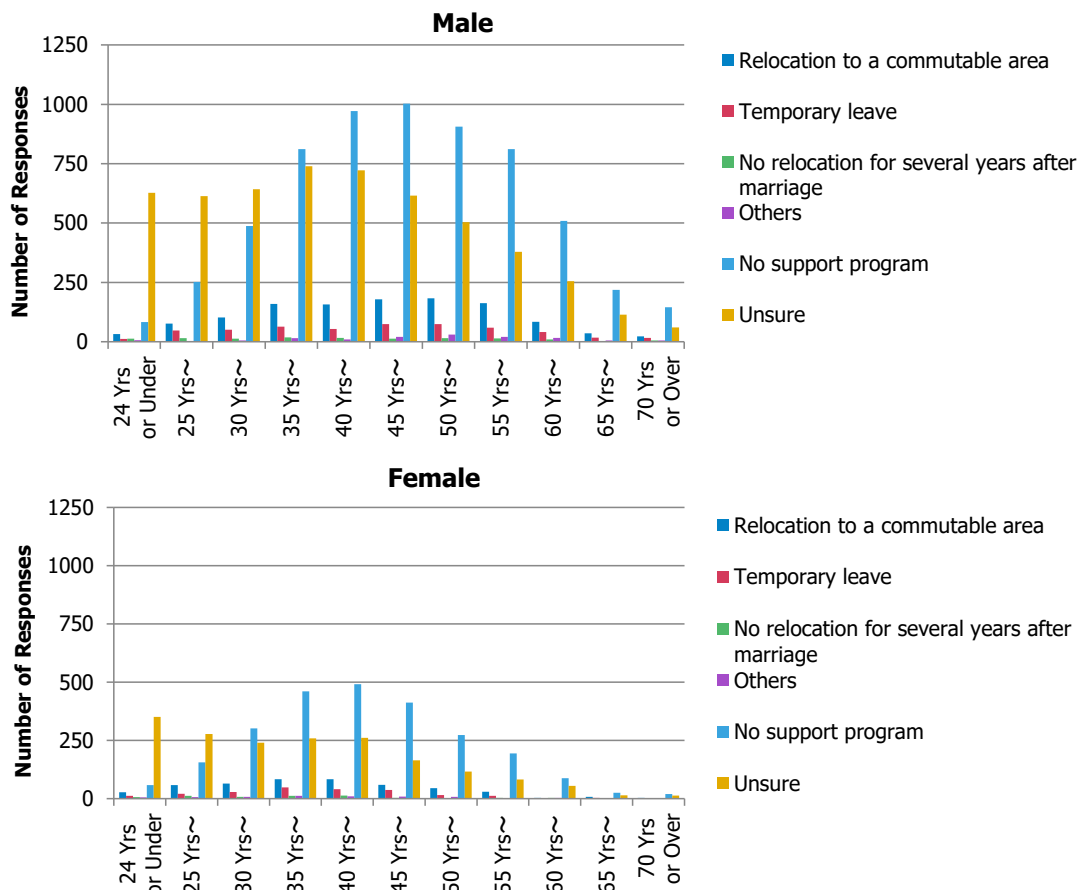


Figure 1.71 Dual Career Support Program by Age Group (Multiple Answers)

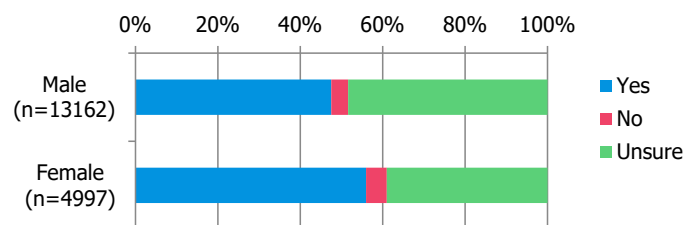


Figure 1.72 Use of Dual Career Support Program (Single Answer)

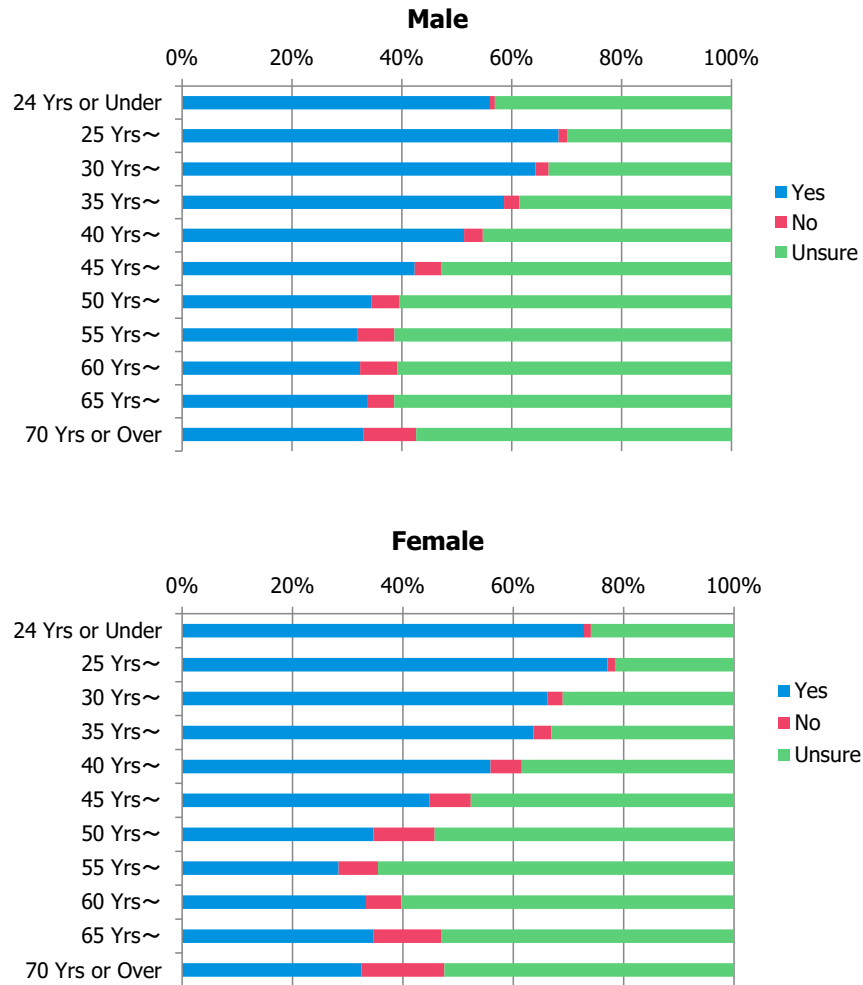


Figure 1.73 Use of Dual Career Support Program by Age Group (Single Answer)

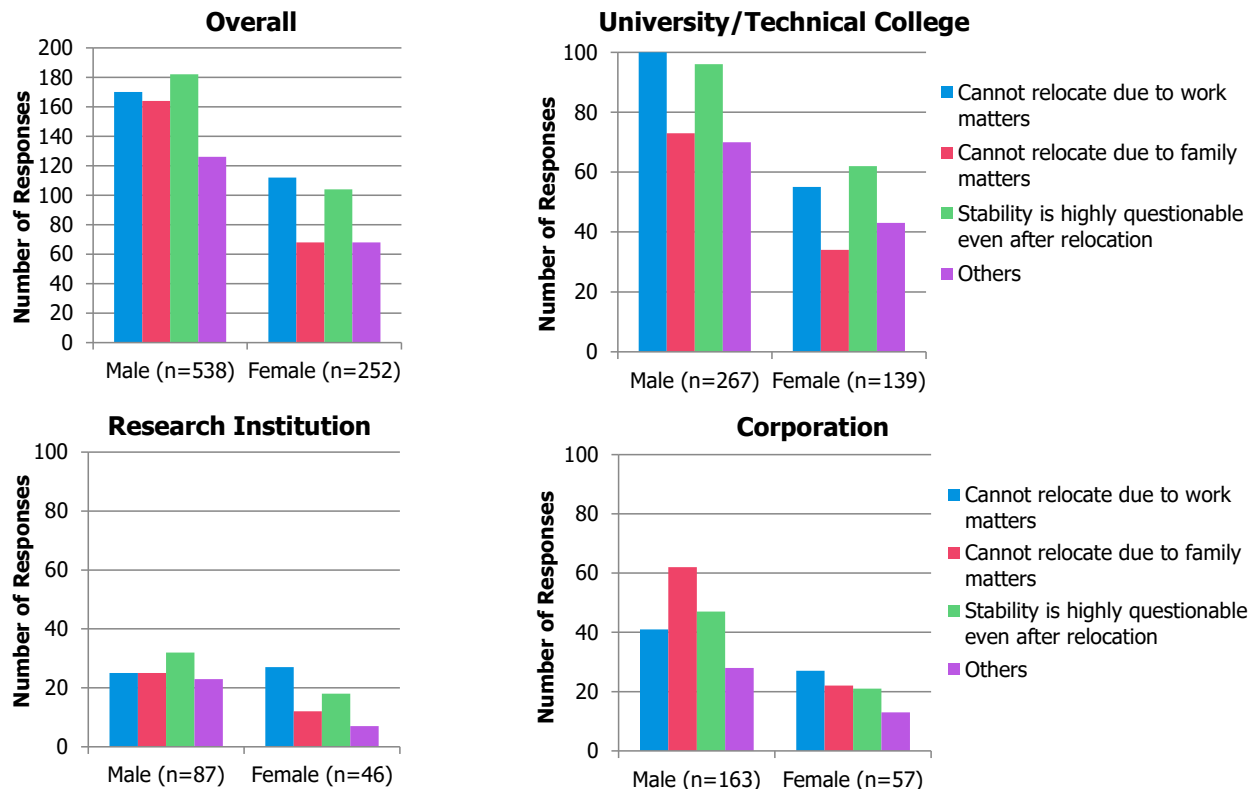


Figure 1.74 Reason for Not Using Dual Career Support Program (Overall/by Institution) (Multiple Answers)

Number of Children (Questions 24, 25.1, 25.2, 32; Figures 1.75-82)

About two-thirds of females are without children, but more than half of males have children. For males the number of children reaches two at age 60, whereas the number of children for females remains nearly flat from their 40's to the early 60's with one child.

The ideal number of children for both genders is two or more, but there is a big difference between that number and the actual number of children.

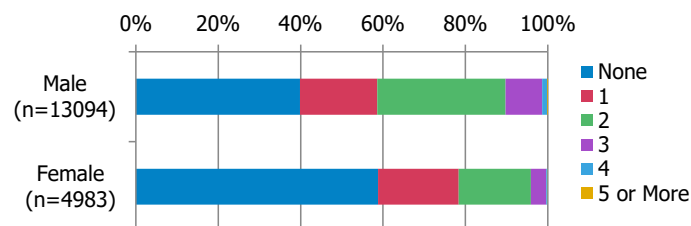


Figure 1.75 Number of Children (Single Answer)

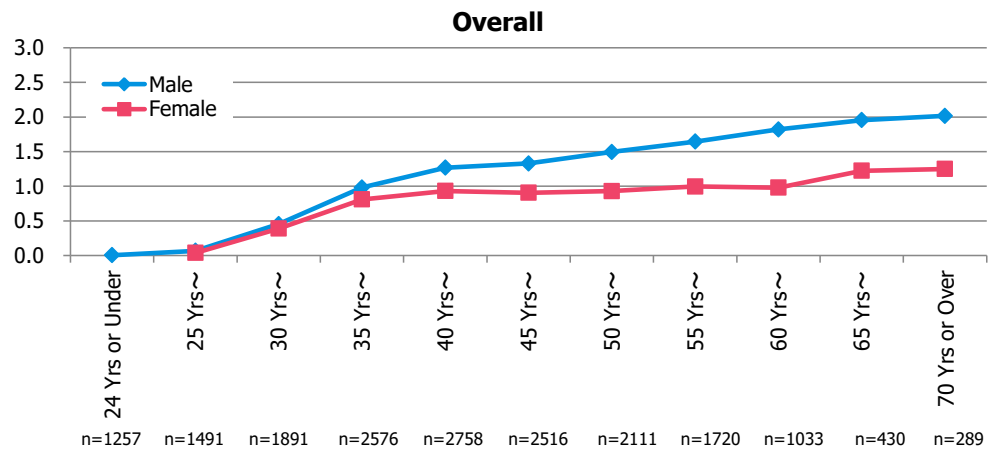


Figure 1.76 Number of Children Overall (Single Answer)

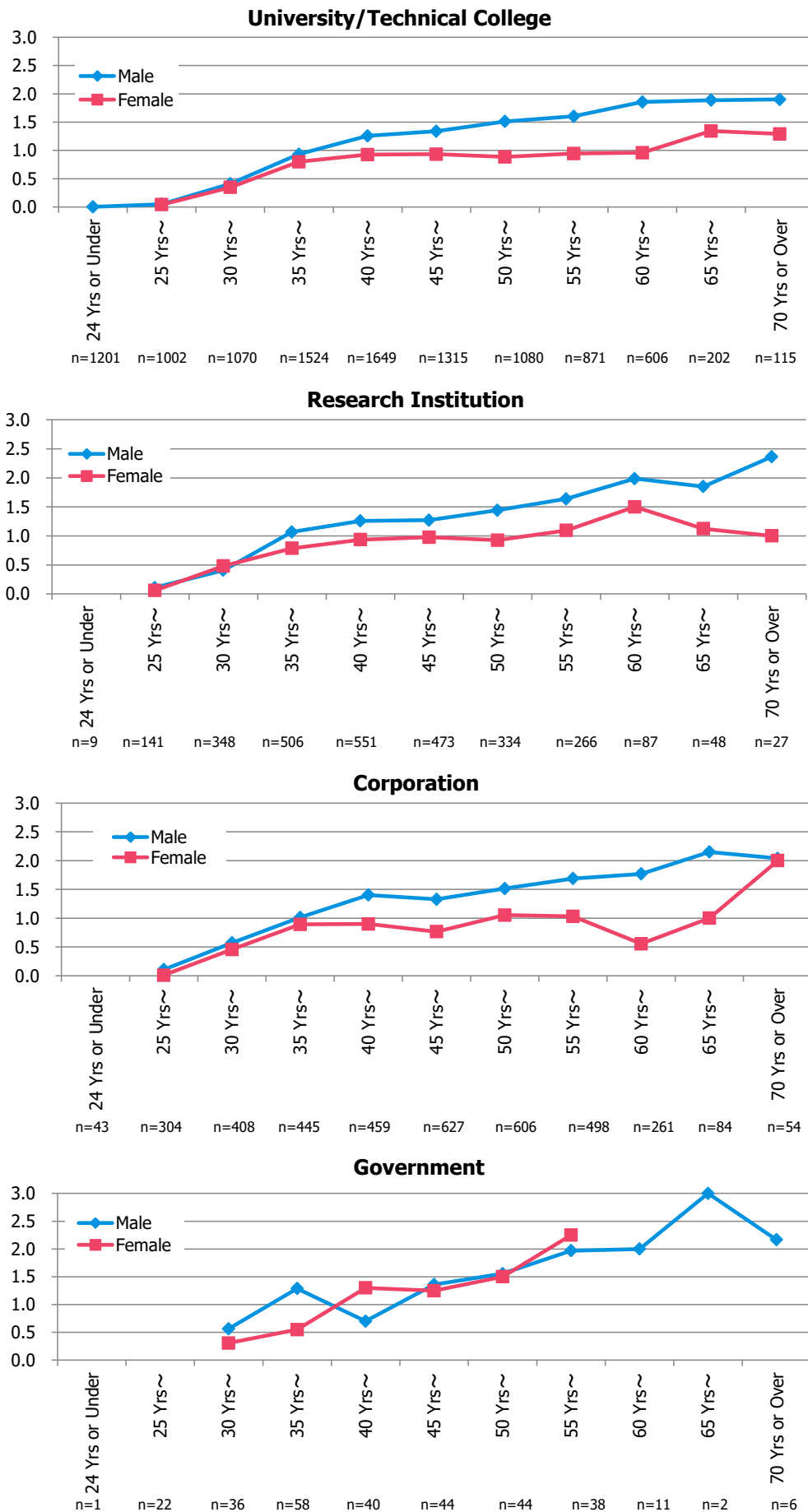


Figure 1.77 Number of Children by Institution (Single Answer)

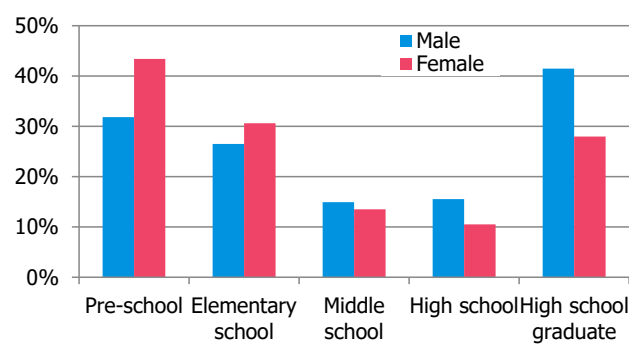


Figure 1.78 Age of Children (for those with children) (Multiple Answers)

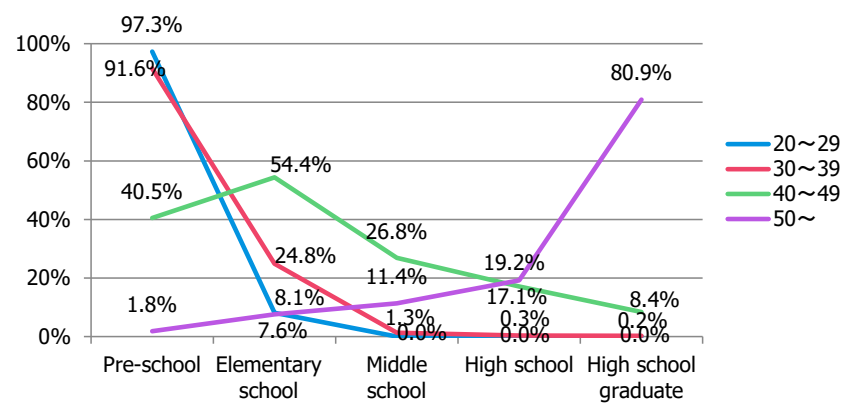


Figure 1.79 Age Relation of Respondents and Their Children (Multiple Answers)

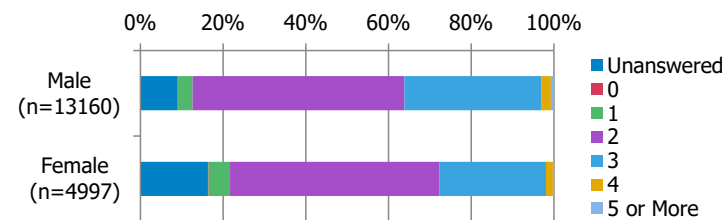


Figure 1.80 Ideal Number of Children (Single Answer)

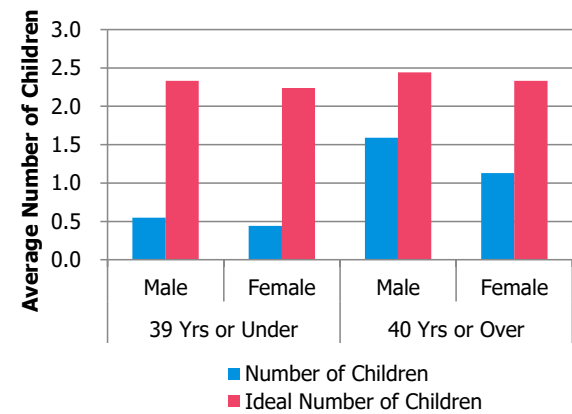


Figure 1.81 Actual and Ideal Number of Children (Single Answer)

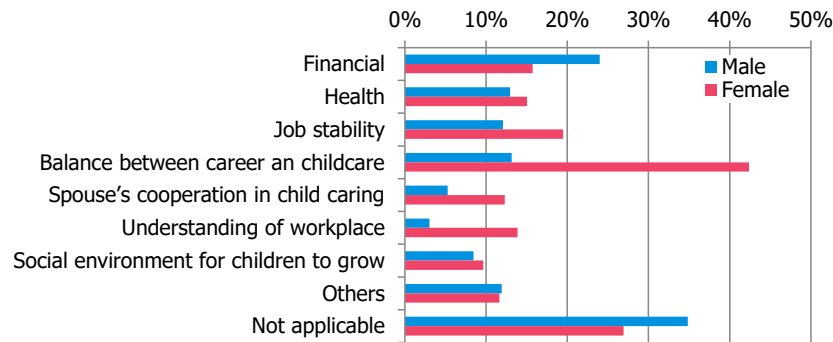


Figure 1.82 Reasons Why Number of Children Are Less Than Ideal (Multiple Answers)

Childcare and Childcare Leave (Questions 25.3, 25.4, 26-31; Figures 1.83-88)

Regarding the primary caregiver of preschool children, males that responded “spouse” and females that responded “day-care center” were both 80%, and showed a difference between genders. For elementary school children, 50% of female responses were “after-school day-care center”.

When males took childcare leave, the length of leave was mostly “less than a month”.

For reasons why childcare leave was not taken, 69% of male responses were “leave was unnecessary”.

When respondents returned to work after childcare leave, many of the males “returned to same duties”, whereas delay in promotion/advancement, assignment to new duties/departments and request for change in duties/departments were observed in the female responses.

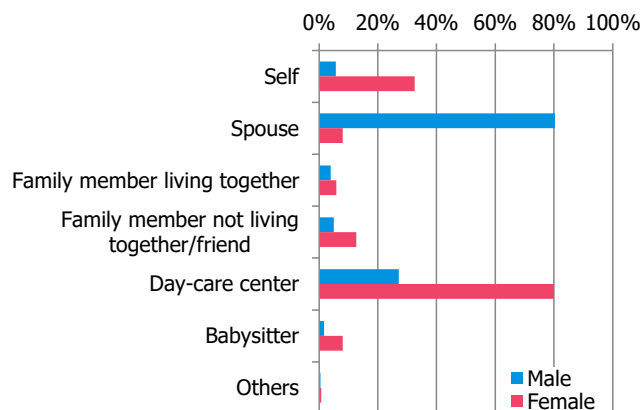


Figure 1.83 Person Responsible for Daytime Childcare (Pre-school) (Multiple Answers)

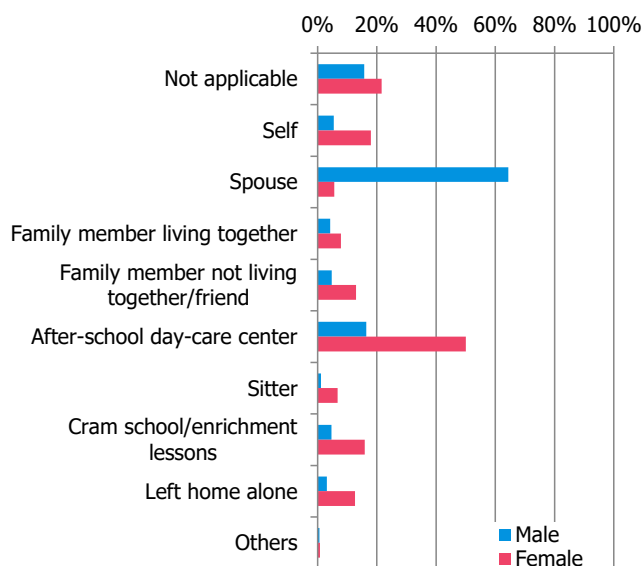


Figure 1.84 Person Responsible for Daytime Childcare (Elementary School) (Multiple Answers)

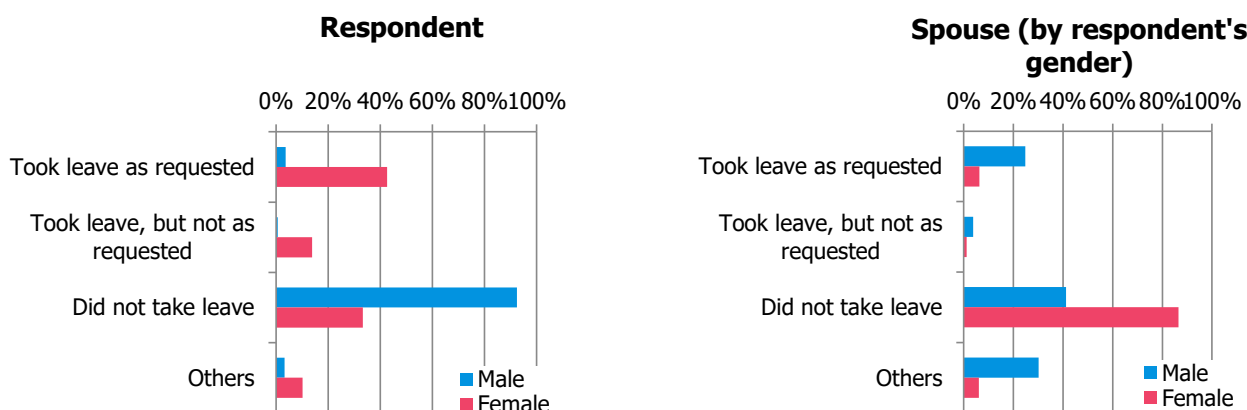


Figure 1.85 Status of Childcare Leave (Multiple Answers)

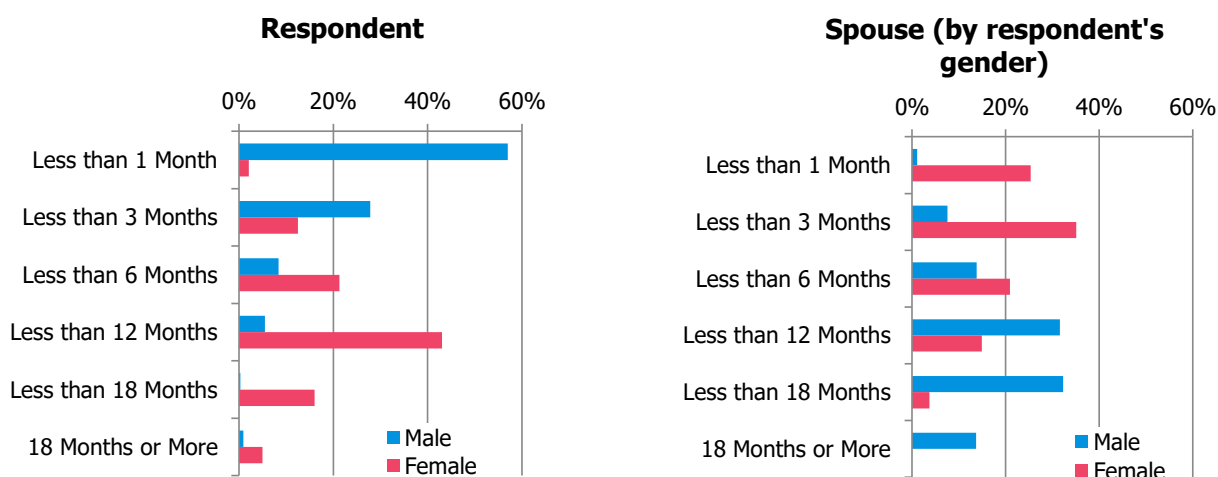


Figure 1.86 Length of Childcare Leave (Single Answer)

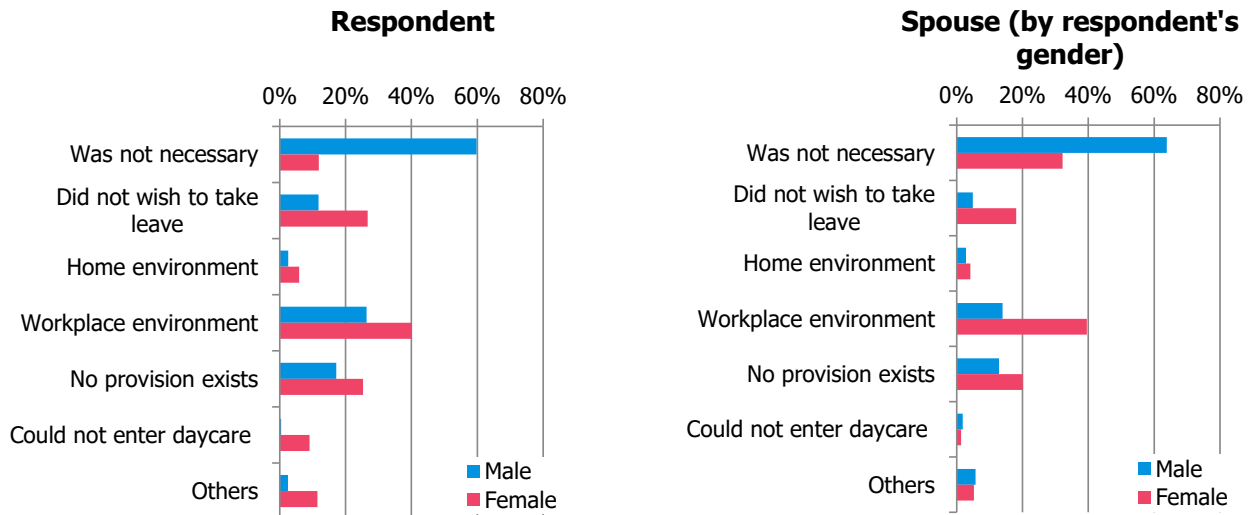


Figure 1.87 Reasons for Not Taking Leave (Multiple Answers)

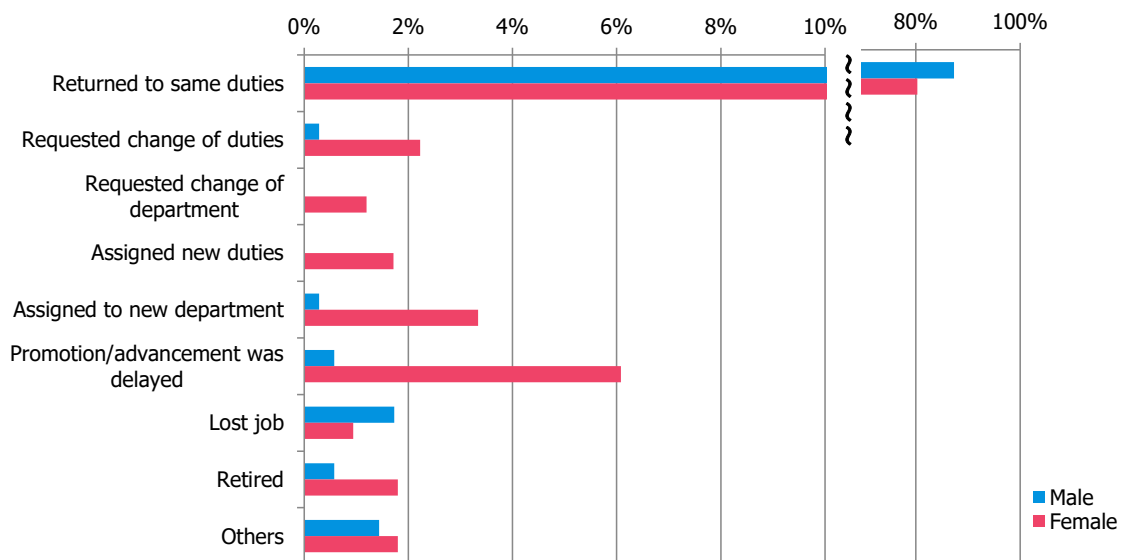


Figure 1.88 Status After Leave (Single Answer)

Nursing Care (Question 33; Figures 1.89-92)

The ratio of respondents that were aware of nursing-care leave program was more than double the ratio of respondents that have family members requiring nursing care

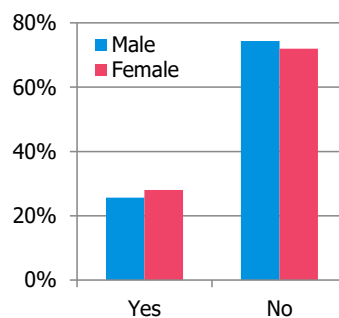


Figure 1.89 Need for Nursing Care of Family Member (Single Answer)

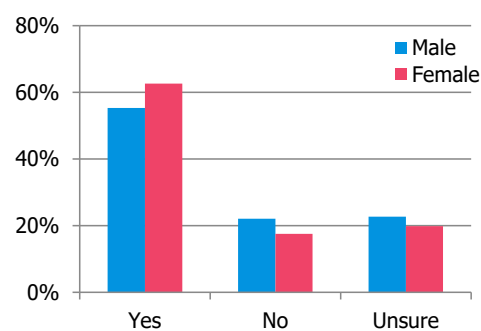


Figure 1.90 Awareness of Nursing-Care Leave (Single Answer)

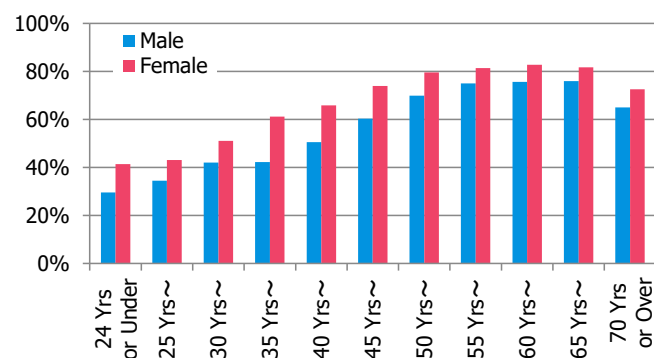


Figure 1.91 Percentage of Respondents Aware of Nursing-Care Leave by Age Group (Single Answer)

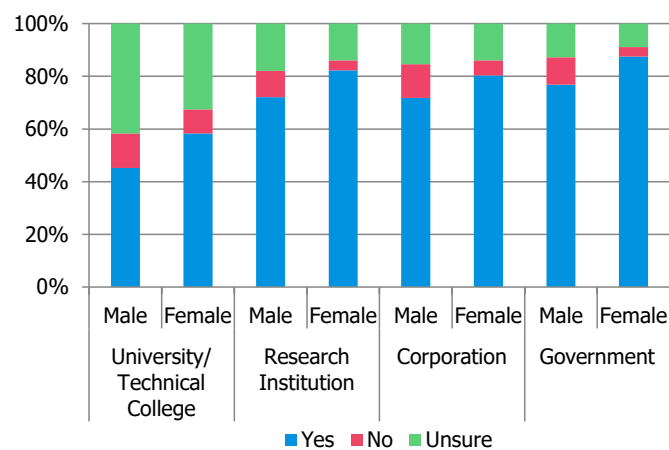


Figure 1.92 Provision for Nursing-Care Leave at Respondent's or Spouse's Workplace (Single Answer)

Balancing Work and Family (Question 34; Figures 1.93-94)

Respondents cited a wide range of viewpoints regarding requirements for balancing work and family including items related to workplace environment, social support and child/nursing care improvement.

There was especially a big difference between genders on “sick child care”.

“Changes in awareness of male and female roles”, “understanding from supervisor” and “workplace atmosphere” responses were higher for females and the task of awareness reform remain. On the other hand, “changes in “work as center” concept” and “financial support for child and nursing care” were higher for males than females.

“Changes in awareness of male and female roles” and “changes in “work as center” concept” responses were higher for females with “elementary school or younger children” compared with females with “no child”.

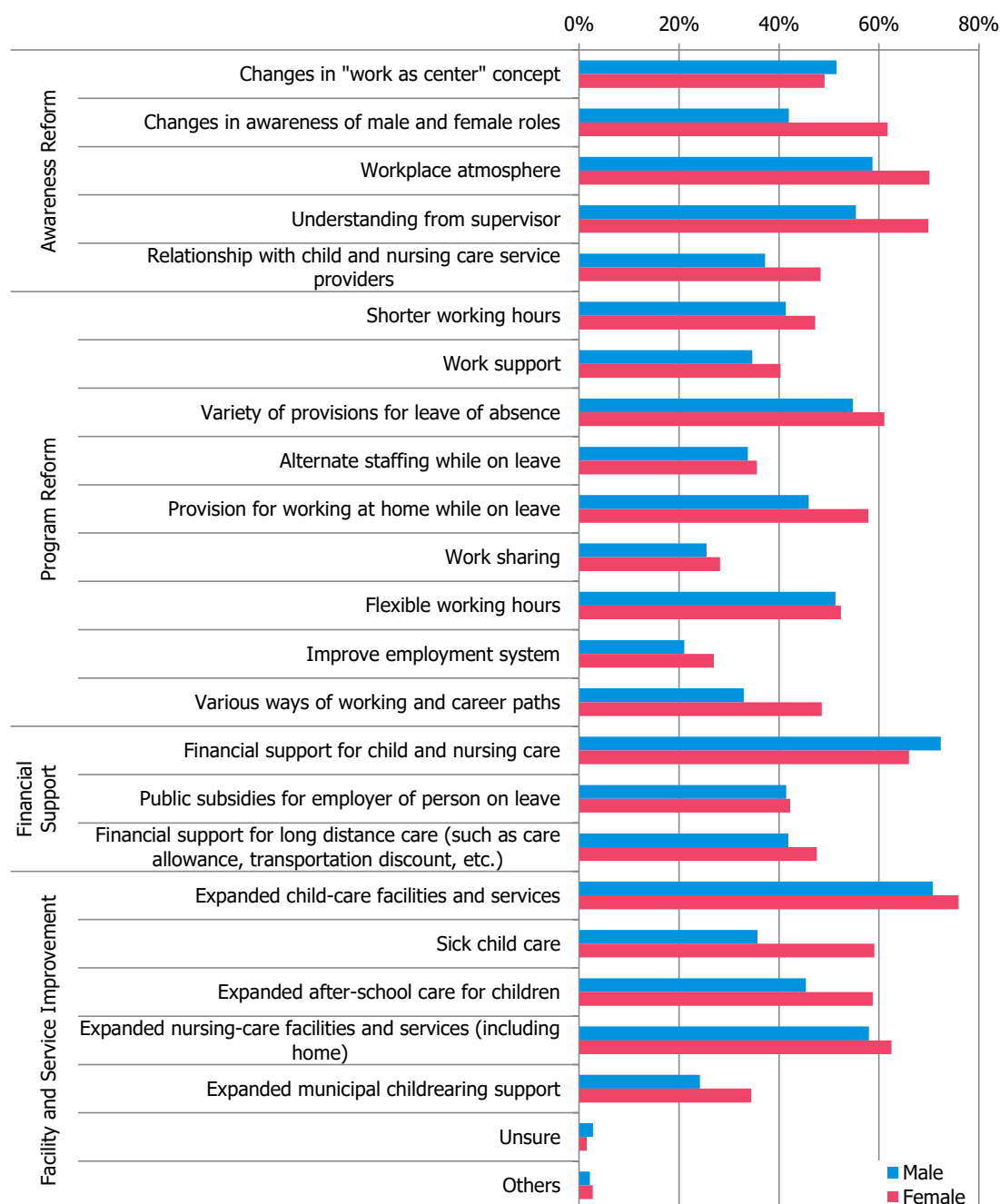
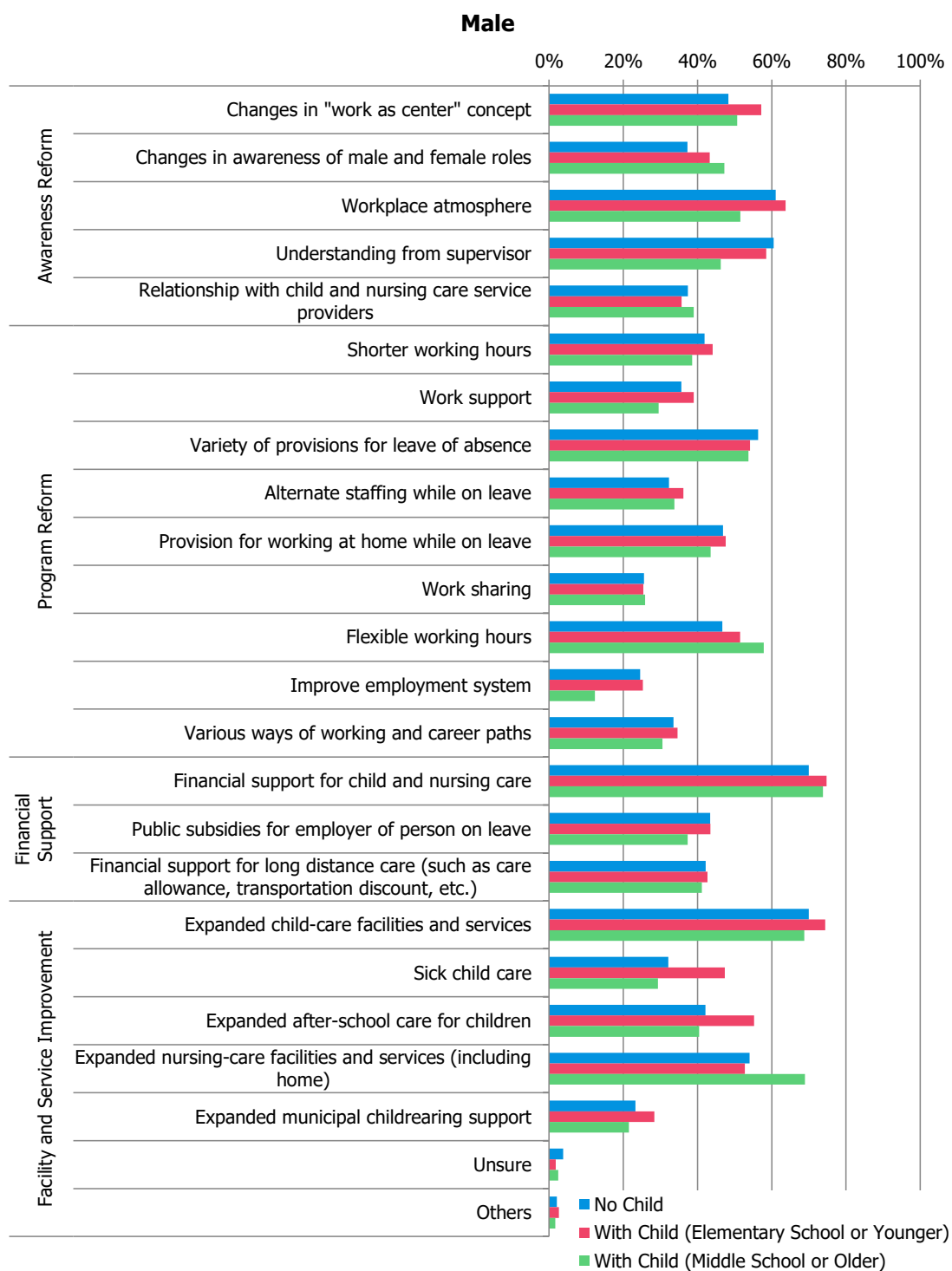


Figure 1.93 Requirements for Balancing Family and Work (Multiple Answers)



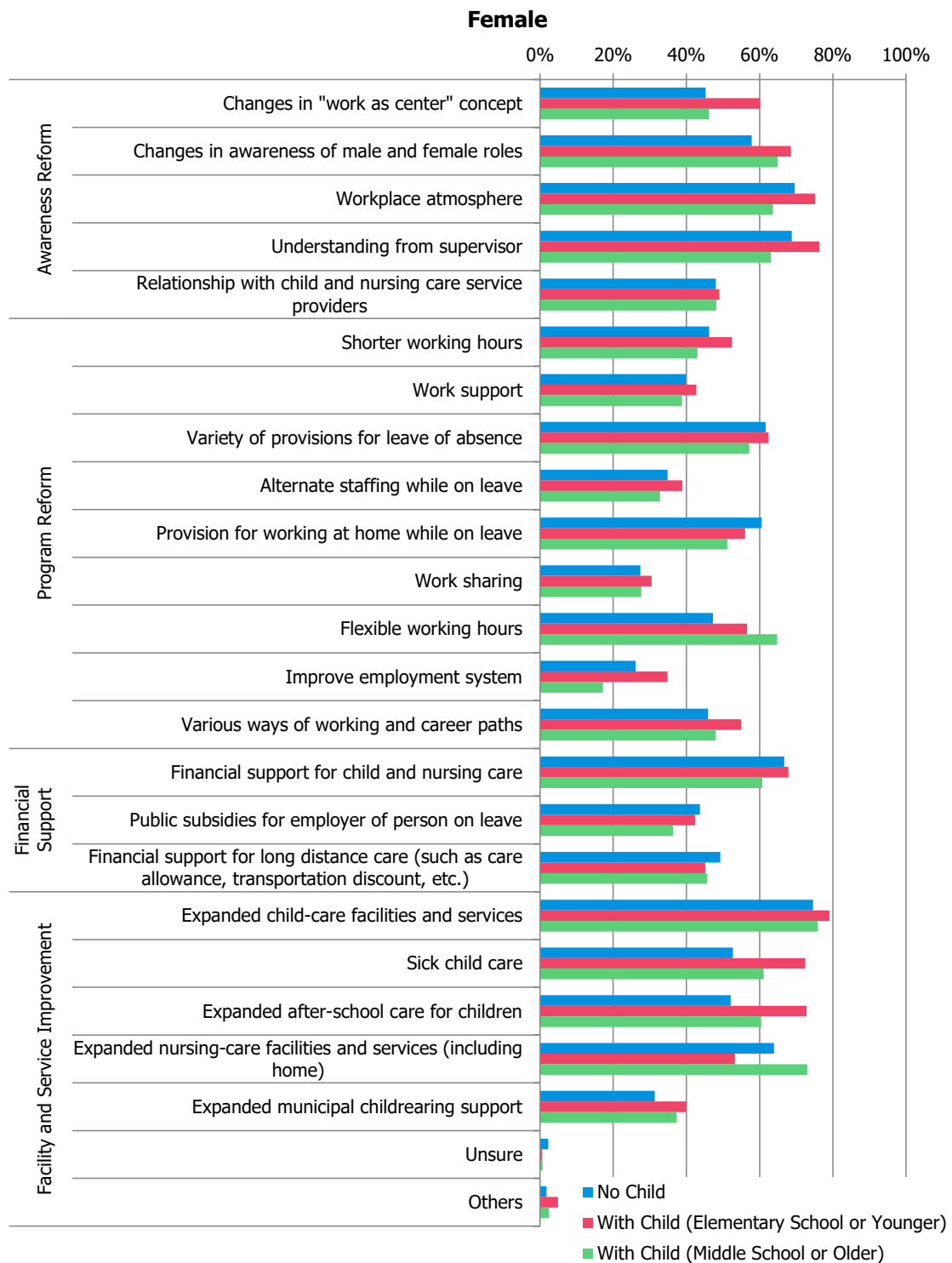


Figure 1.94 Requirements for Balancing Family and Work by Presence of Children (Multiple Answers)

Environment Required for R&D (Question 35; Figure 1.95)

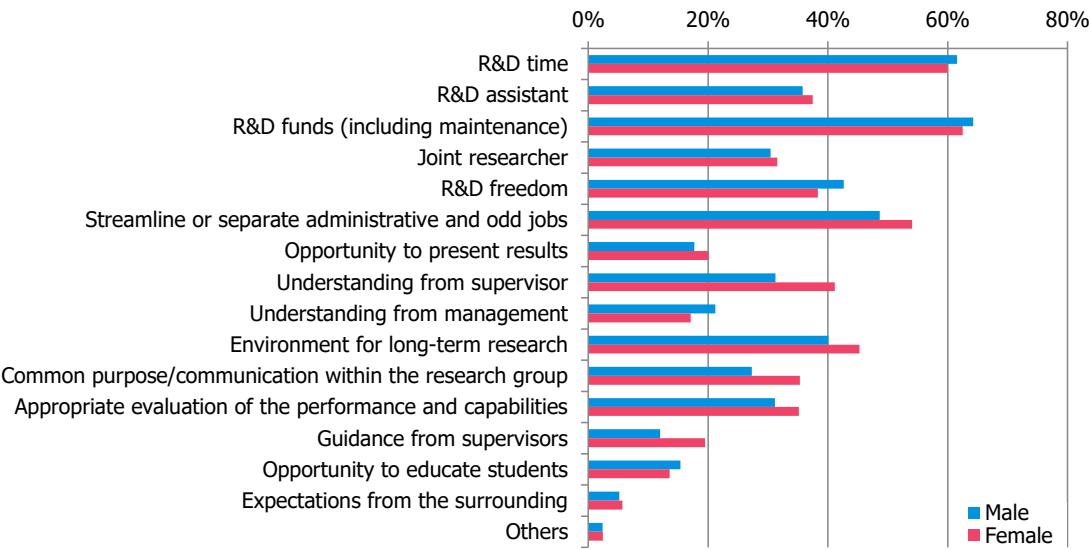


Figure 1.95 Environment Required for R&D (Multiple Answers)

1.4 Gender Equality

Percentage of Female Researchers (Question 36; Figures 1.96–98)

“Balancing family and work is difficult” received the most response for the reason why the percentage of female researchers is low.

Percentage of respondents that selected gender-related reasons such as “difference in male and female abilities”, “difference in male and female qualifications” and “image of research/technical workplace is not good” was higher for males.

For reasons why there are a low percentage of females in leadership positions, “balancing family and work is difficult” was again the highest reason selected by both genders. This was followed by “frequent early retirement or leave of absence”, “female ratio is low for the generation currently in leadership position” and “lack of consideration for child and family care in performance evaluation”.

The response ratios for “female supervisors not desired” and “evaluators tend to give priority to males” were higher for females, and the differences in ratios were large as well.

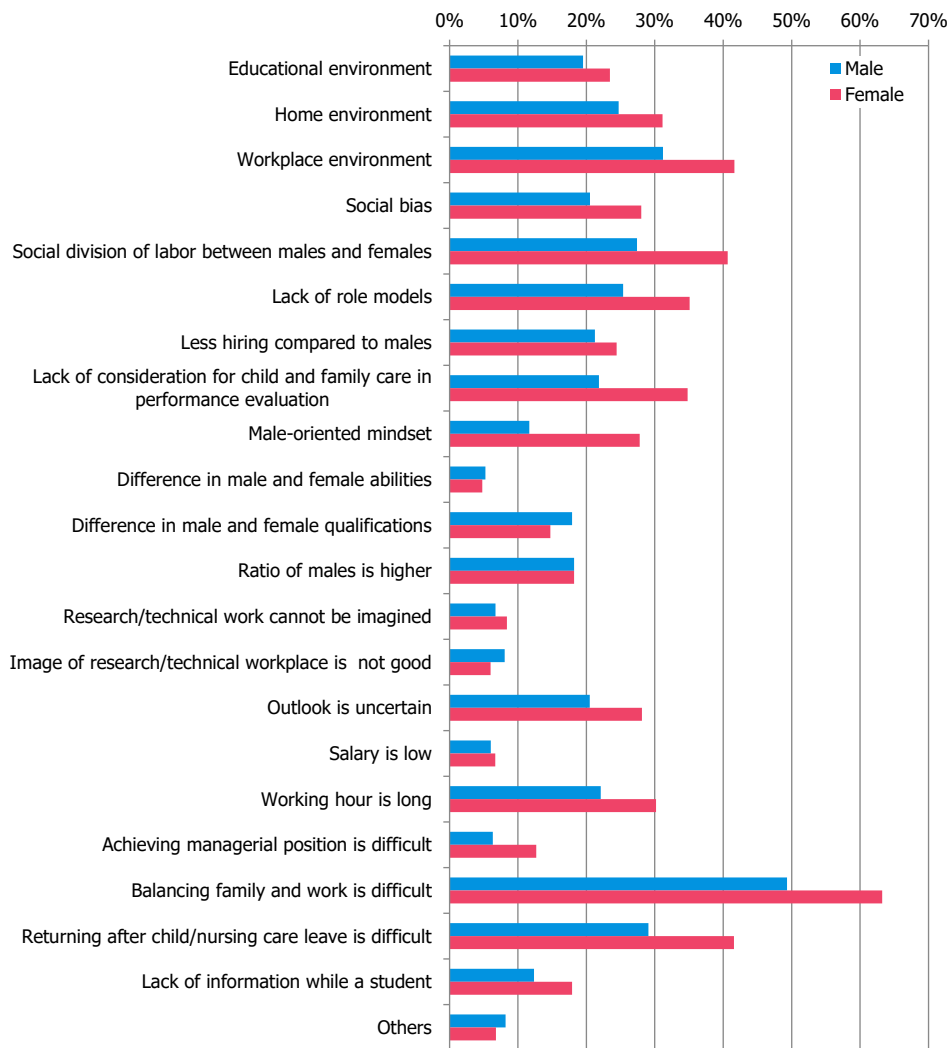


Figure 1.96 Reasons for Low Percentage of Female Researchers (Multiple Answers)

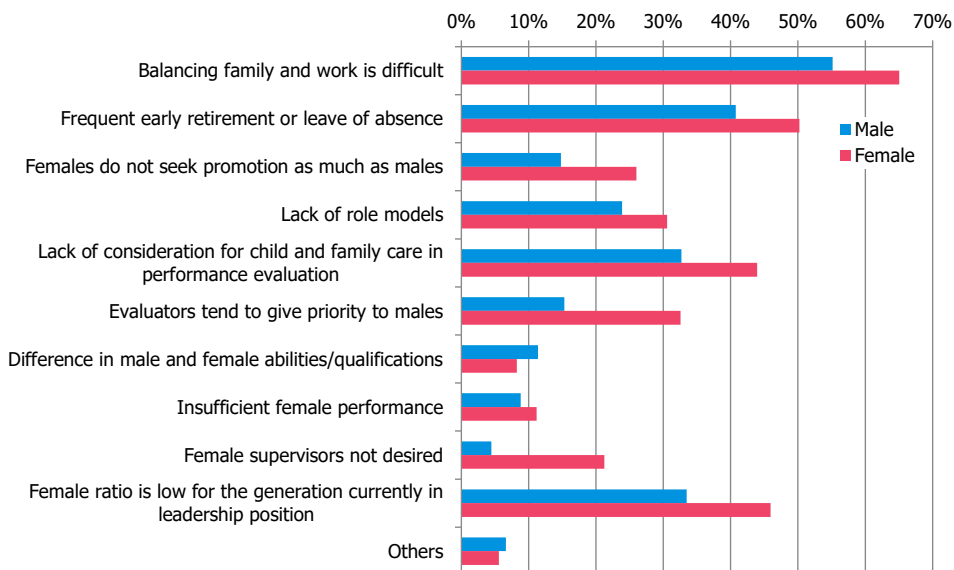


Figure 1.97 Reasons for Low Percentage of Females in Leadership Position (Multiple Answers)

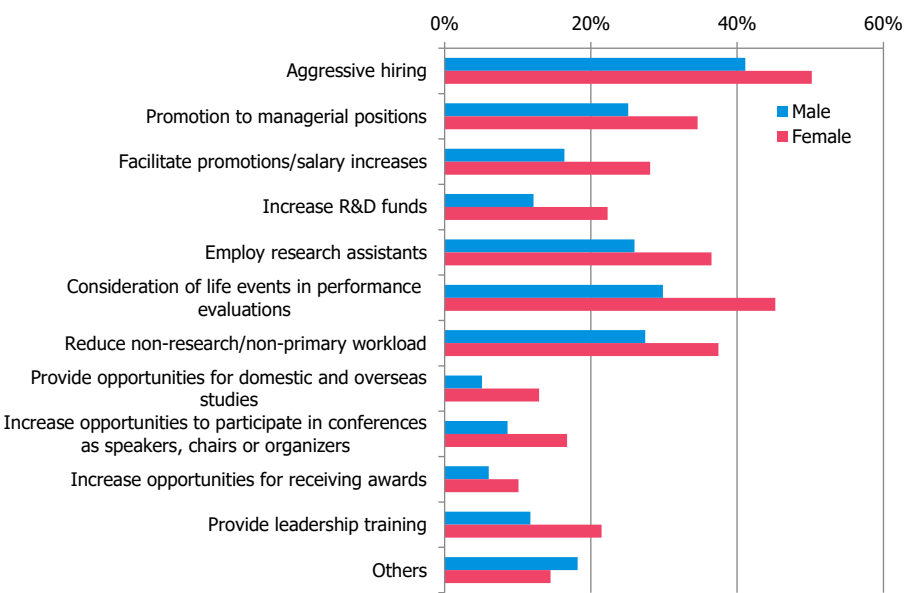


Figure 1.98 Remedies for Improving Female Ratio (Multiple Answers)

Awareness of New Policies (Questions 37, 38; Figures 1.99-102)

The percentage of respondents who “do not know” any of the policies was more than 30%, and the awareness of policies is still low.

Half of the respondents believe support programs related to childbirth and childcare is “meaningful”.

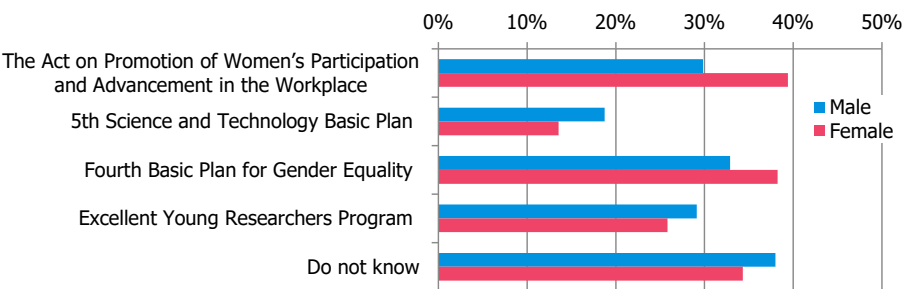
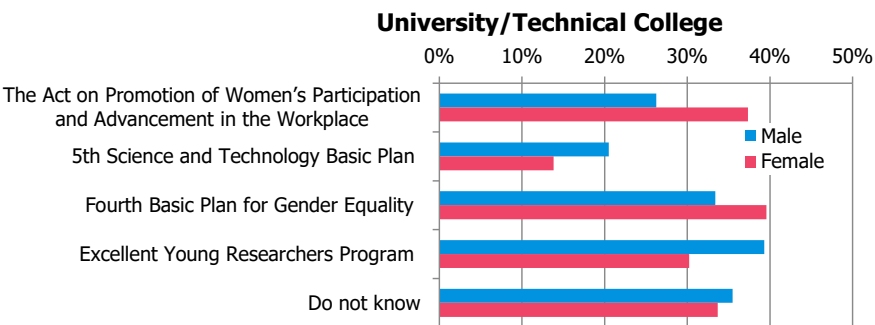


Figure 1.99 Awareness of Policies (Multiple Answers)



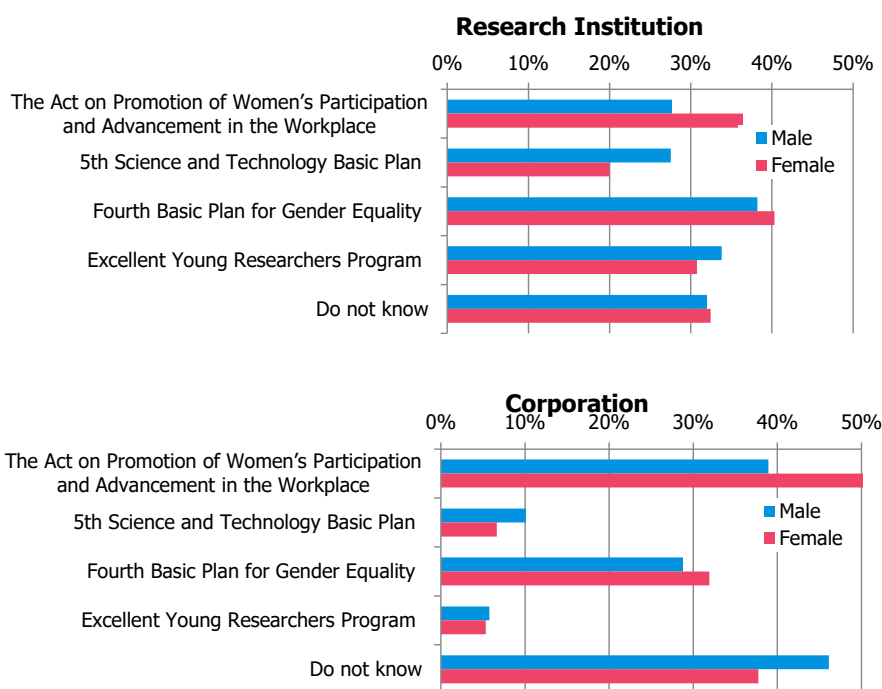


Figure 1.100 Awareness of Policies by Institution (Multiple Answers)

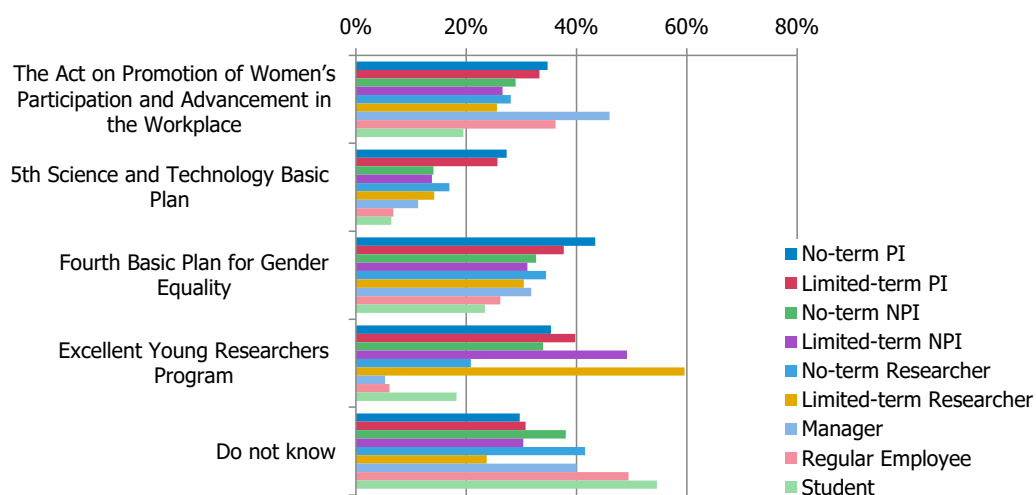


Figure 1.101 Awareness of Policies by Occupational Field (Multiple Answers)

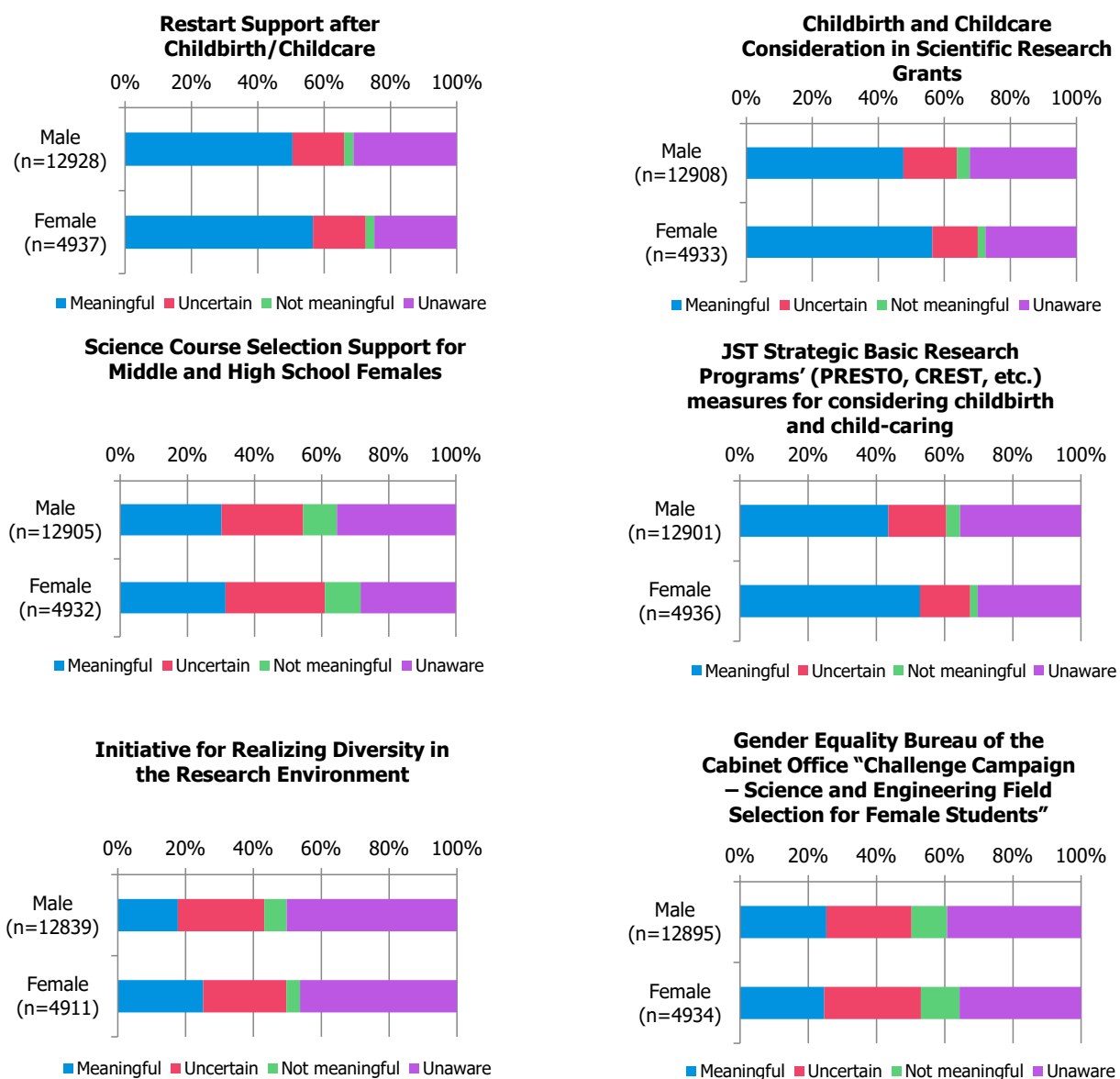


Figure 1.102 Awareness and Significance of National Policies and Support for Female Researchers (Single Answer)

Awareness and Significance of Numerical Target (Question 39; Figures 1.103-107)

Regarding numerical targets for female hirings, negative opinions exceeded the positives for males, but for females, positive opinions surpassed the negatives.

Many of the respondents that answered “no” to the existence of numerical targets in their organization thought setting a target to be “unnecessary”.

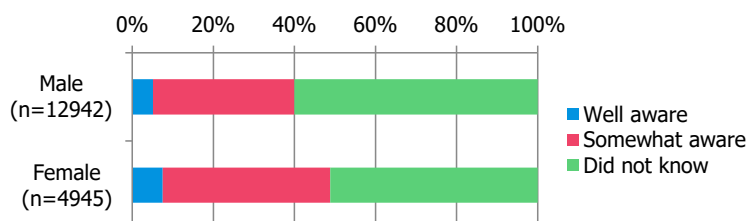


Figure 1.103 Awareness of Numerical Target for Female Hiring (Single Answer)

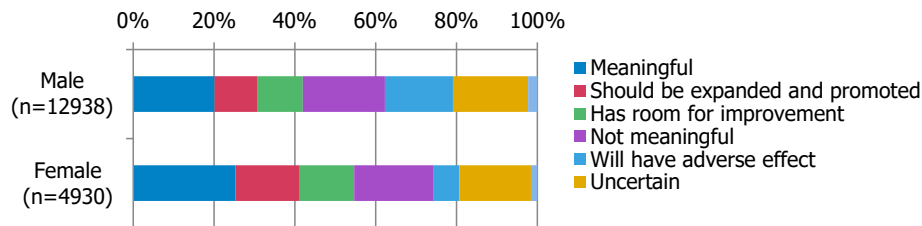


Figure 1.104 Significance of Setting a Numerical Target for Female Hiring (Single Answer)

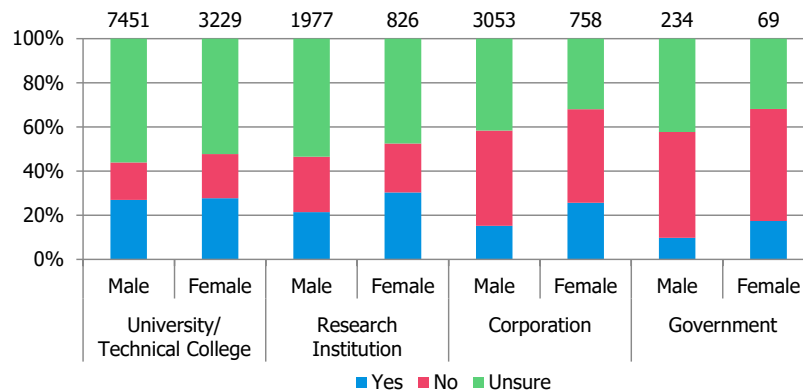


Figure 1.105 Numerical Target for Female Hiring (Single Answer)

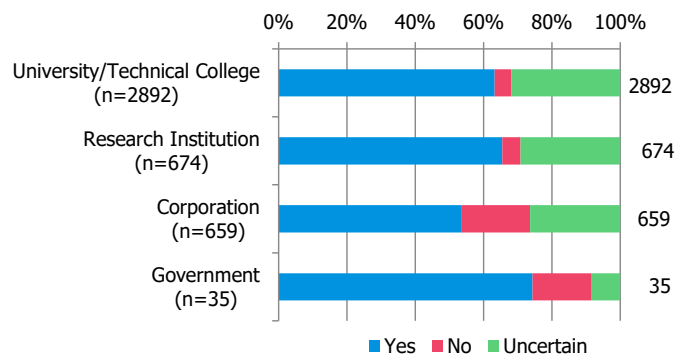


Figure 1.106 Published Numerical Target for Female Hiring (for those who replied yes to set target) (Single Answer)

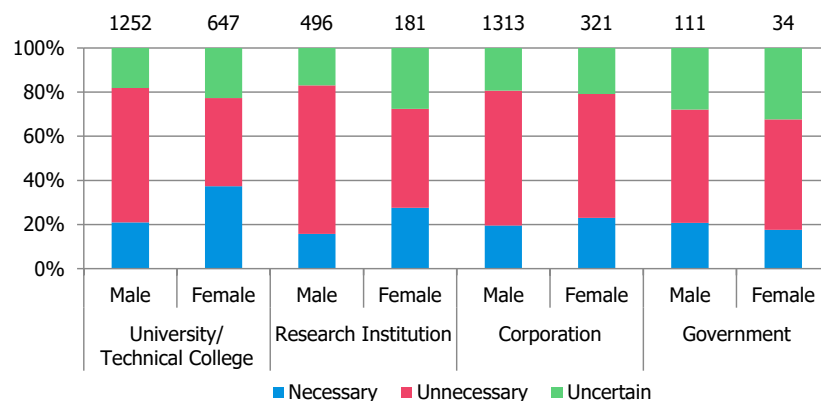


Figure 1.107 Need for Numerical Target (for those who replied no to set target) (Single Answer)

Promotion of Gender Equality (Question 40; Figures 1.108-111)

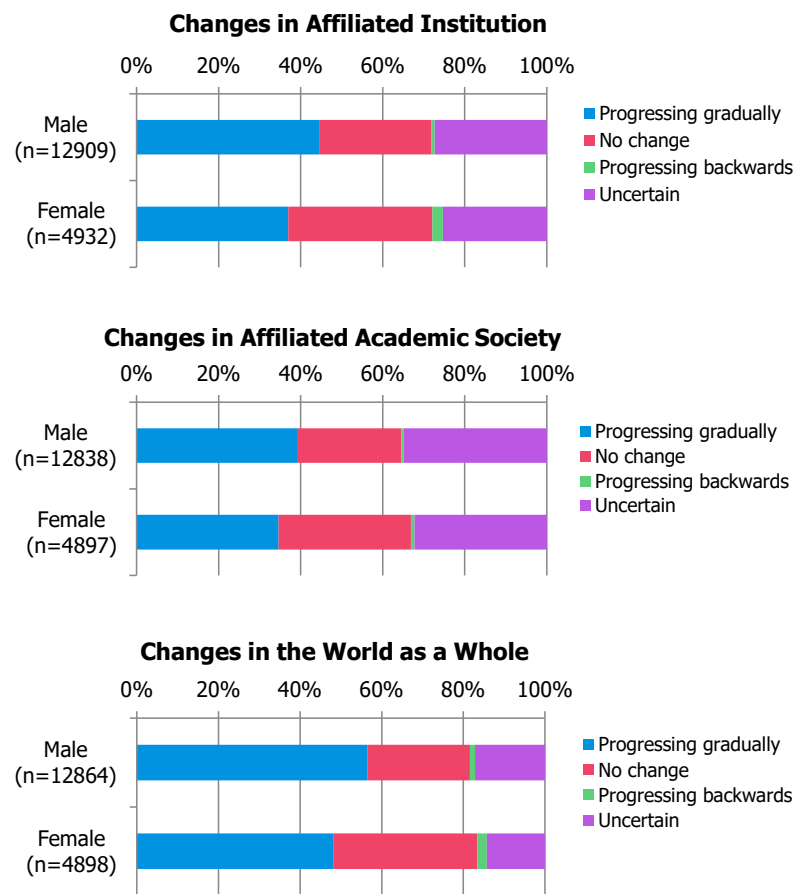


Figure 1.108 Progress in the Promotion of Gender Equality (Single Answer)

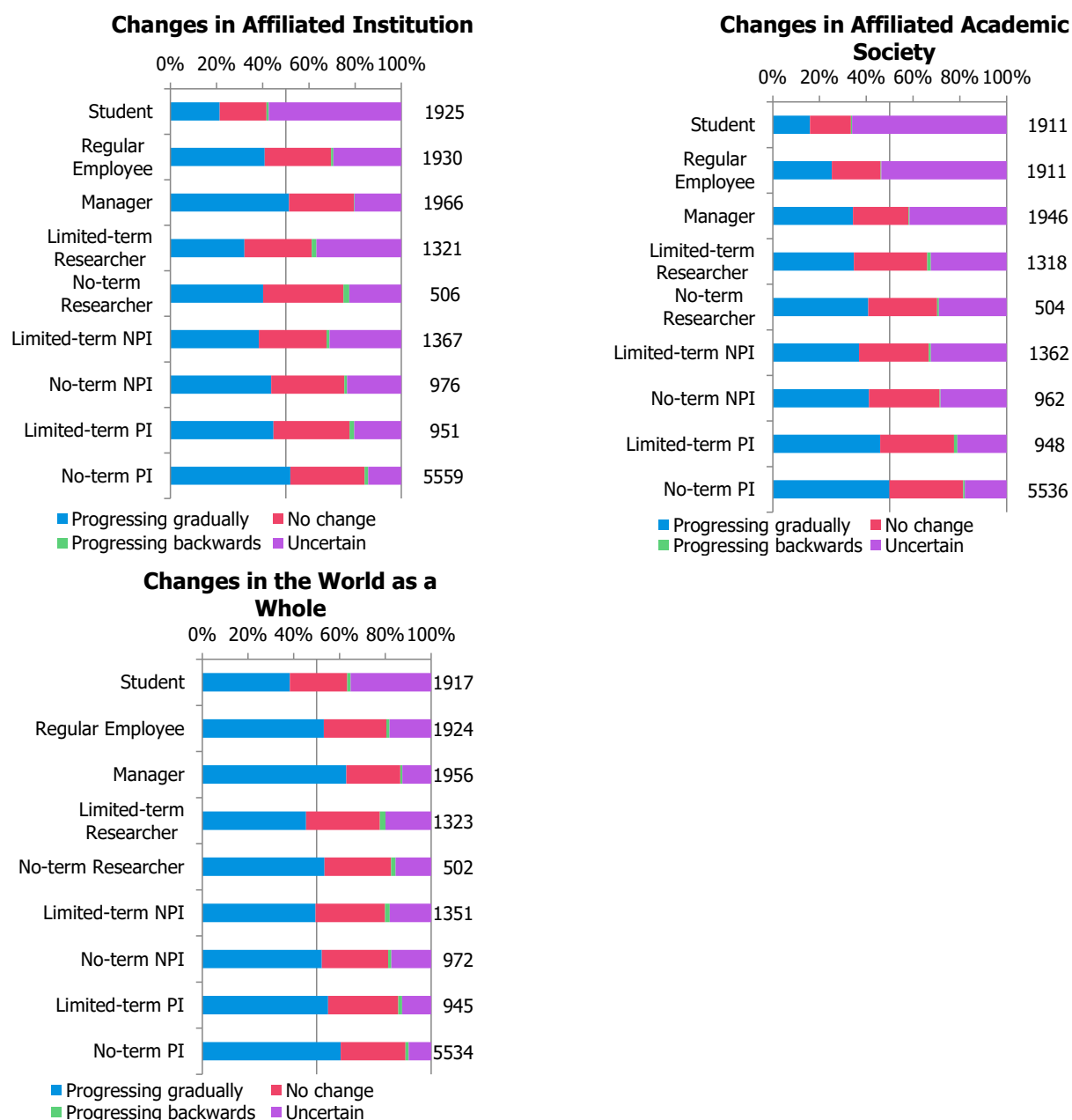


Figure 1.109 Progress in the Promotion of Gender Equality by Occupational Field (Single Answer)

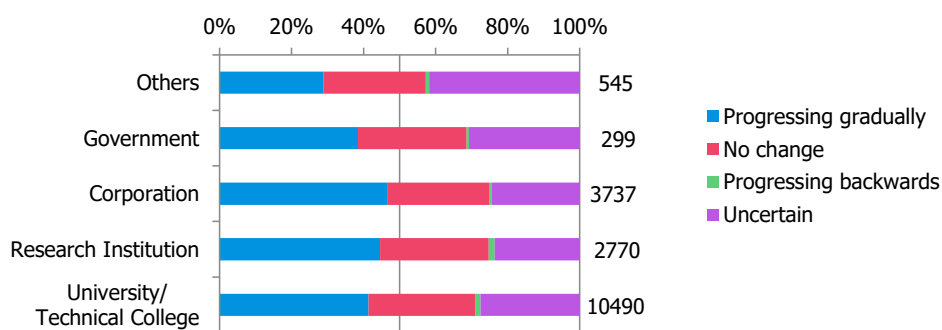


Figure 1.110 Progress in the Promotion of Gender Equality by Institution (Single Answer)

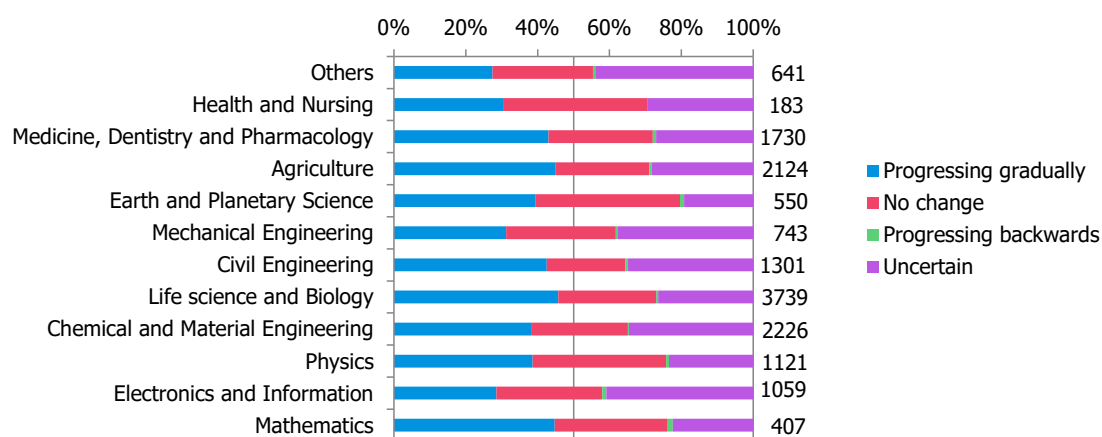


Figure 1.111 Progress in the Promotion of Gender Equality by Profession (Single Answer)

Future Requirements for Gender Equality (Question 41; Figure 1.112)

Both males and females cited “reform male/female awareness” is necessary to promote gender equality.

Many respondents cited “reform male awareness”. Large percentage of both genders replied “increase male participation in housework and childcare” as well as “expand support of child and nursing care”.

Respondents believe further improvement in workplace environment is necessary centering on the effort to “encourage supervisor understanding” and “expand types of working arrangements”.

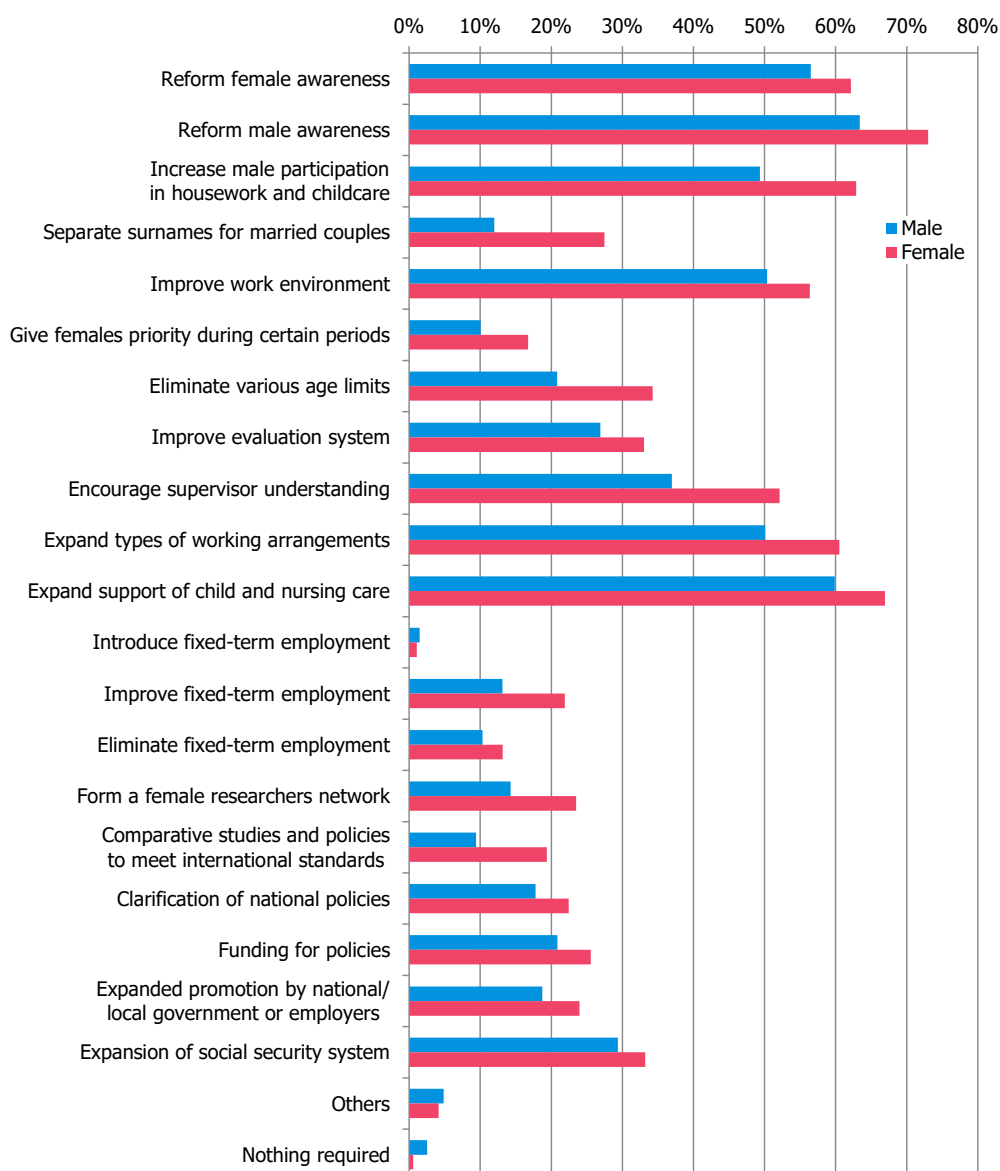


Figure 1.112 Future Requirements for Gender Equality (Multiple Answers)

Chapter 2 Important Issues: Gender Gap in Job Positions

In the past surveys, female ratios tended to drop as job position became higher. As with the first, second and third surveys, a job position index was adopted to confirm the transition. In the fourth survey, a researcher for university/technical college or research institution is classified as either a limited-term researcher or no-term researcher, and postdoctoral position that was present until the last survey is now considered as a limited-term researcher. Additionally, the position of dean was added to the list of job positions for a university/technical college.

Job Position Index (Figure 2.1)

Job position index was defined from the job position distribution for each institution affiliated with the respondents and the result is presented in Figure 2.1. Compared to the past three surveys, there was no major change as far as affiliated institutions were concerned.

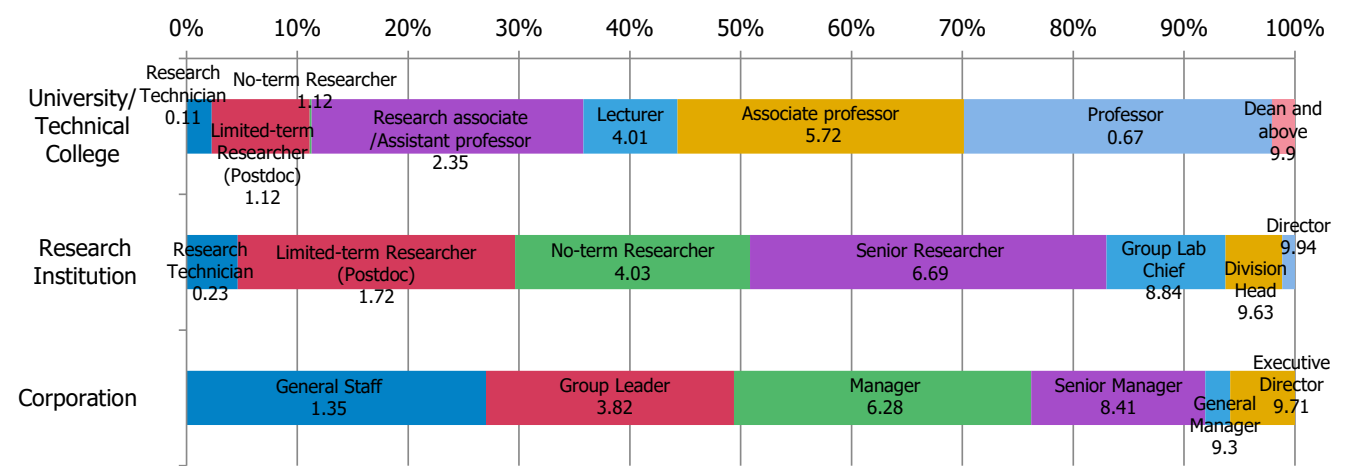


Figure 2.1 Definition of Job Position Index (Single Answer)

Job Position Index by Age for Each Institution (Figure 2.2)

Looking at the result as a whole from age 25 to 65, the job position index rises smoothly according to age for all institutions. However, tendency for the male promotion curve by age to outpace that of the female remains unchanged and female promotions begin to lag at around age 30. The gender gaps seen with university/technical college and research institution were greater than that of the corporation.

Looking at the overall job position index and using 7 points as a center guideline, although there is 5-year leeway for each institution, males reach the guideline at around age 50 while for the females the age is around 60. The age for females is some ten years higher, and it is clear promotion is slower for females.

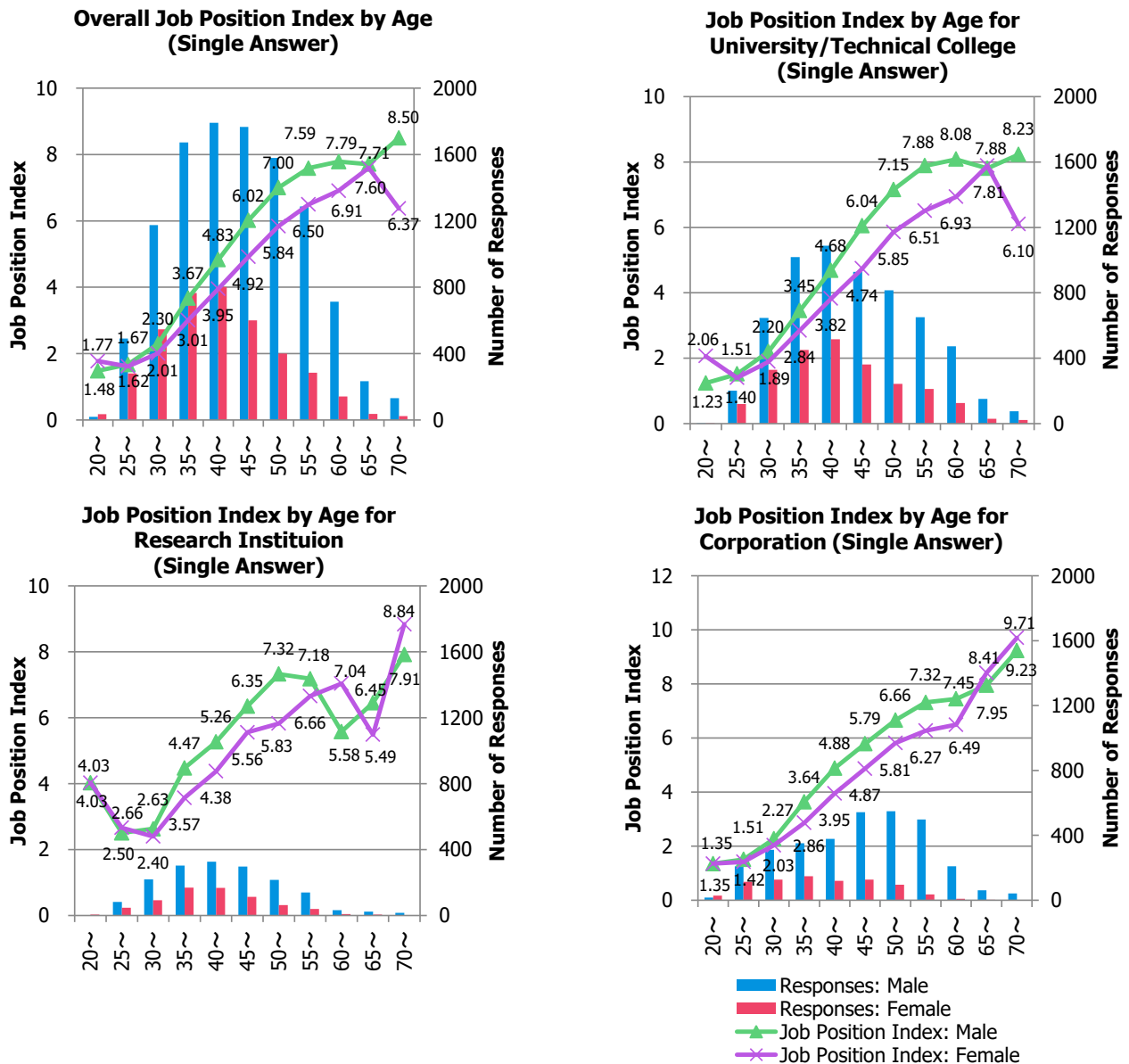


Figure 2.2 Job Position Index by Age for Each Institution

Job Position Index by Age for University/Technical College (Figure 2.3)

University/technical college was divided into national, public, private and technical college and the transition of the job position index by age is presented in Figure 2.3.

Looking at the transition from age 25 to 65, the gender gap tends to become larger as age increases for all four institutions. Among the three university institutions, the national had the largest gap. Looking mainly at the 7-point index mark, female promotion lags the male by roughly ten years. For technical college, the female index flattens out as age increases and the gender gap is larger than the universities.

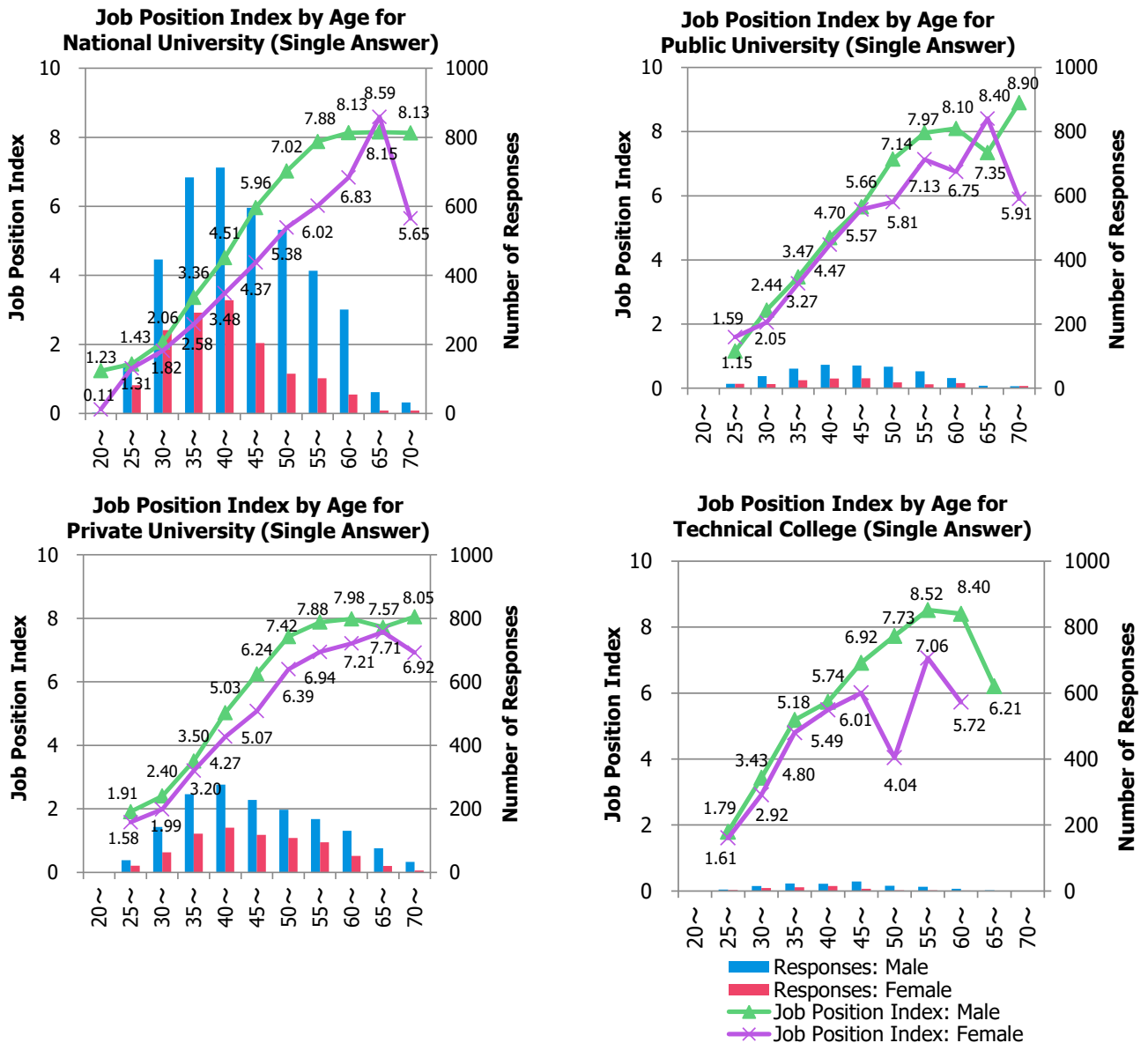


Figure 2.3 Job Position Index by Age for University/Technical College

Job Position Index by Age for Each University/Technical College Academic Field (Figure 2.4)

Figure 2.4 shows the academic fields organized into six fields.

Starting at around age 45, the gender gap begins to grow with age in all fields. However, among the six fields, the change in gender gap is relatively small for the engineering and agricultural fields. The gender gaps in job position indexes were averaged in the three stages between the ages of 40 and 55, which are considered the prime working period with abundant career buildup. The results were 0.79 for science, 0.84 for engineering, 1.12 for life science/biology, 1.24 for chemical/material engineering, 0.95 for agriculture and 1.17 for health (medicine/dentistry/pharmacology), and gender gap differs depending on the field.

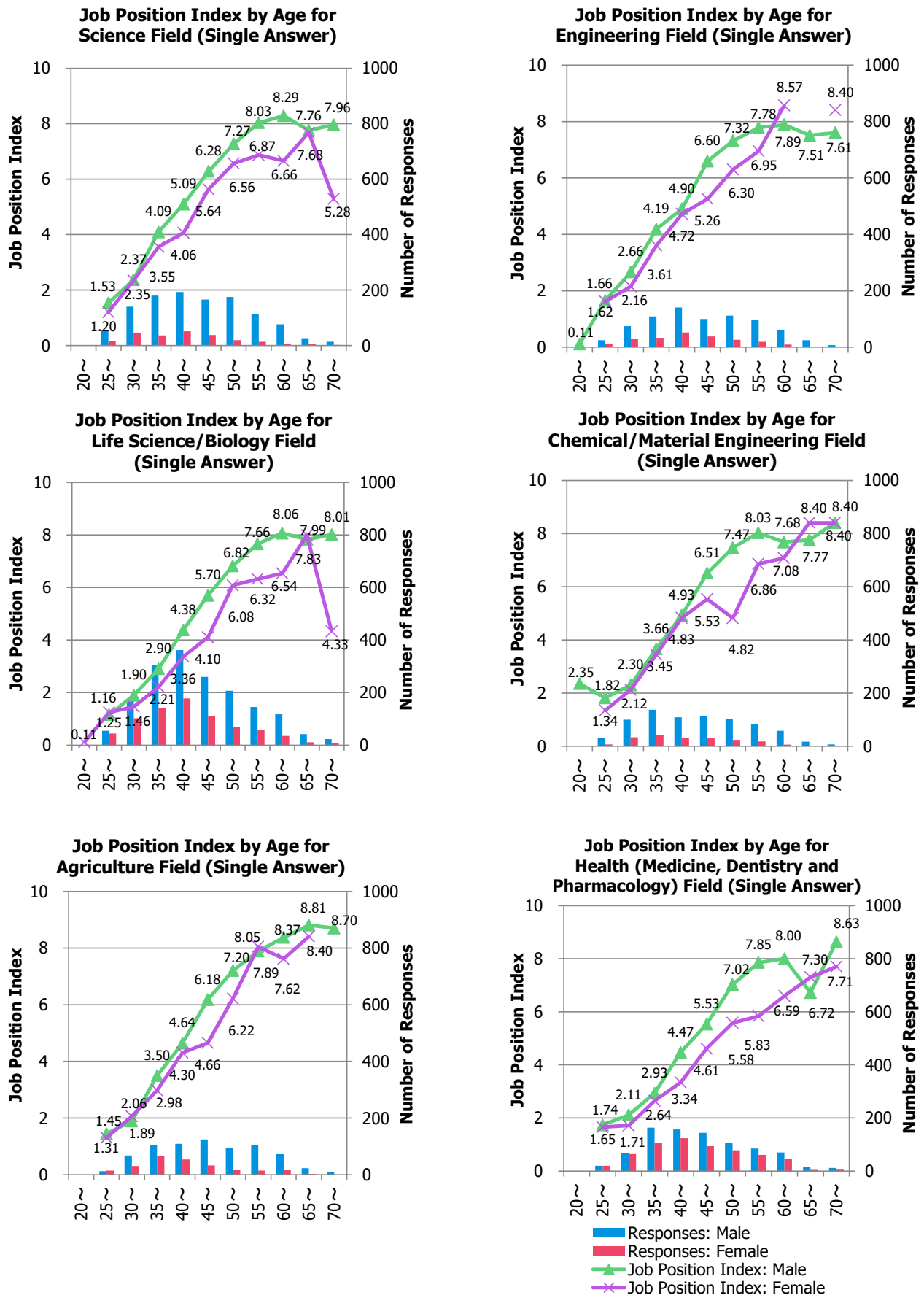


Figure 2.4 Job Position Index by Age for Each University/Technical College Academic Field

Years of Employment as a Female Faculty (Lecturer or above) in University/Technical College (Figure 2.5)

The number of years a female has been employed as a faculty member is shown in Figure 2.5. Ratio of females that have been employed at their current faculty post from one to fewer than ten years range between 19% and 32% with 25% being the average. Years of employment for female faculties are gradually up since the previous survey and the range indicates female hiring is progressing in recent years. Ratio of female faculties that have been at their post for ten years or more is 19% and years of employment are up from the previous survey.

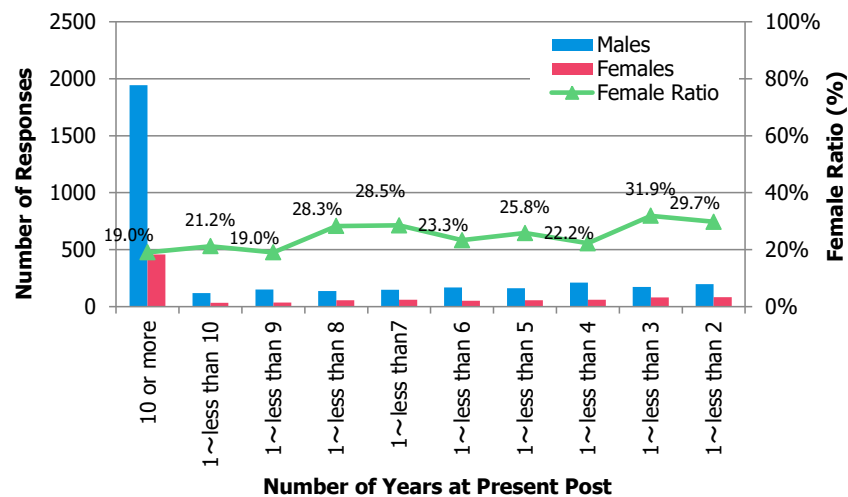


Figure 2.5 Percentage of Active Female Faculties (Lecturer or above) in University/Technical College (Single Answer)

Years Elapsed Since Acquiring Degree and Current Occupation (Figure 2.6)

The elapsed years and current occupation have been organized by gender (Figure 2.6). Summarizing the status of limited-term NPI and limited-term researcher (postdoc), for both limited-term NPI and limited-term researcher and for both genders, 70% or more have had their doctoral degree for less than ten years. After acquiring a degree, many initially start with limited-term employment, but as years pass from six to fifteen years, no-term employment and limited-term employment reaches the same level. At sixteen years or more, about 10% are under limited-term employment regardless of gender. Comparing the genders, there is no clear difference between the genders until ten years have passed after degree acquisition. Beyond ten years, female ratio of limited-term employment is higher than of the male suggesting females spend more years under limited-term employment than males.

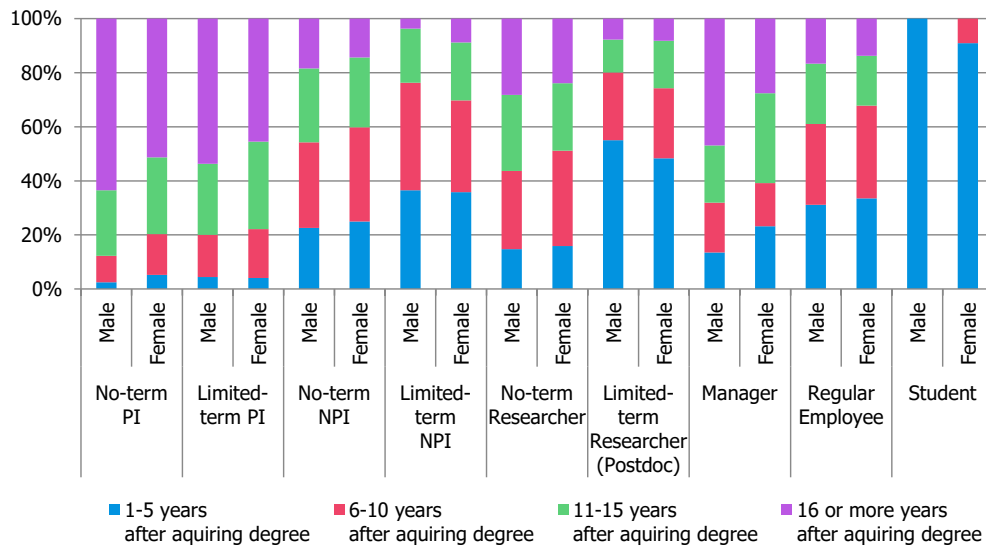


Figure 2.6 Years Elapsed Since Acquiring Degree x Current Occupation x Gender (Single Answer)

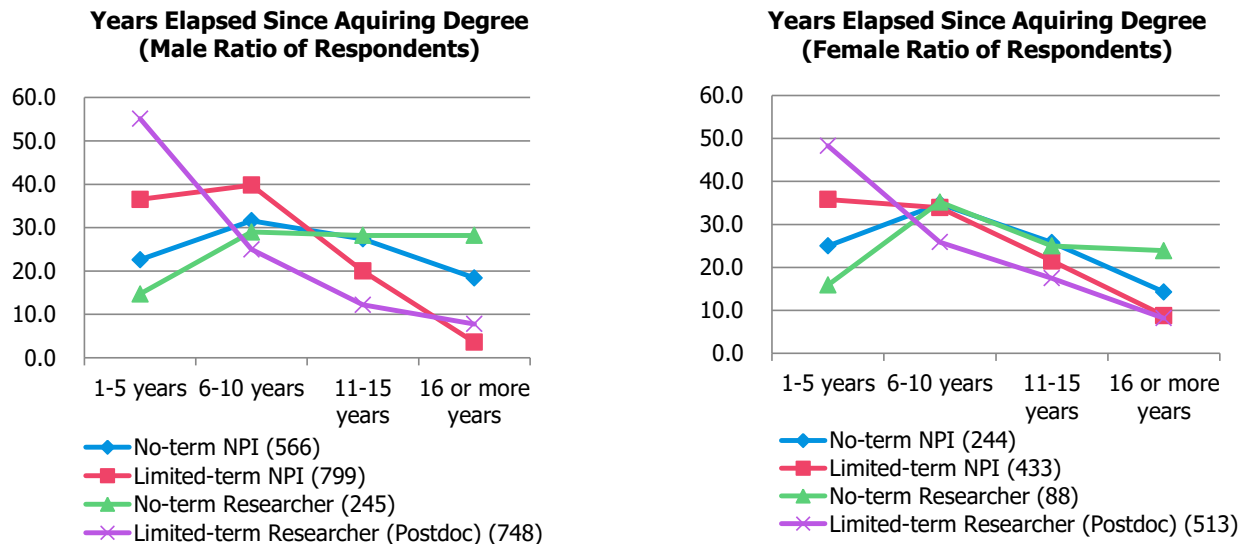


Figure 2.6 (Supplemental) Job Position and Years Elapsed Since Acquiring Degree (Ratio of Respondents) () is number of responses

Chapter 3 Important Issues: Child and Nursing Cares

In order for the male and female to balance work and family together, raising awareness and improving the environment are very important. This chapter analyzes in detail the actual condition of “child and nursing cares”, an area in which a great gender gap exists.

Number of Children (Figures 3.1-2)

(Figure 3.1) There is almost no difference between the genders in the hours spent at the workplace for parents with no children or children of high school age and above, but there is a clear difference among parents with preschool to middle school children.

Especially for those with elementary school children, there is an average difference of 9.0 hours between genders.

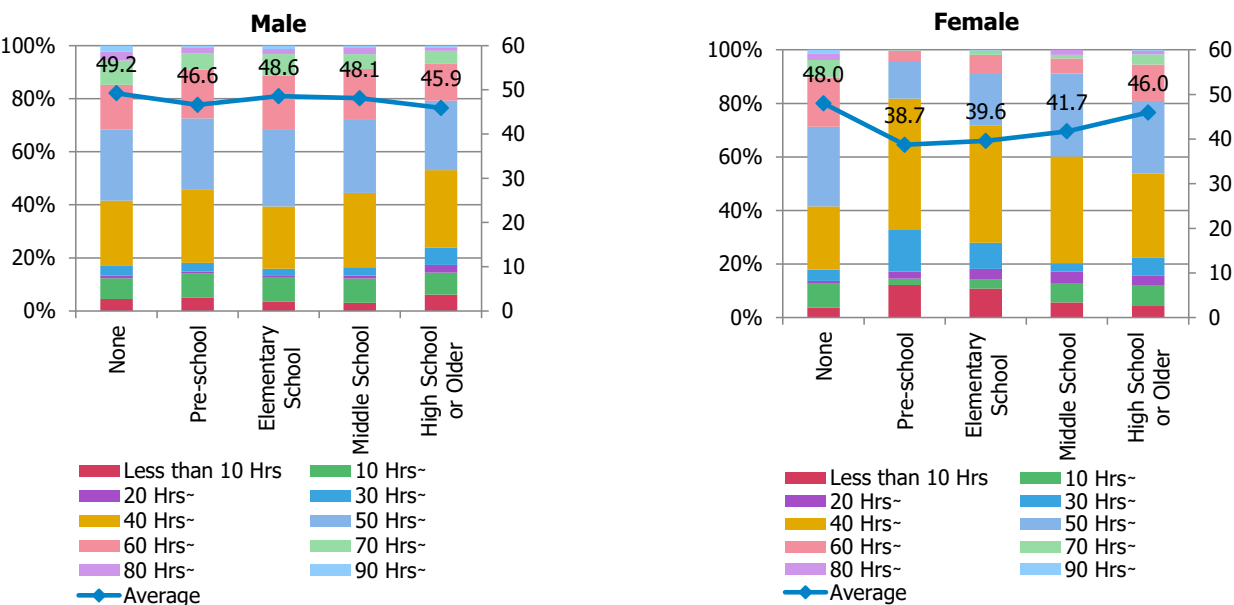
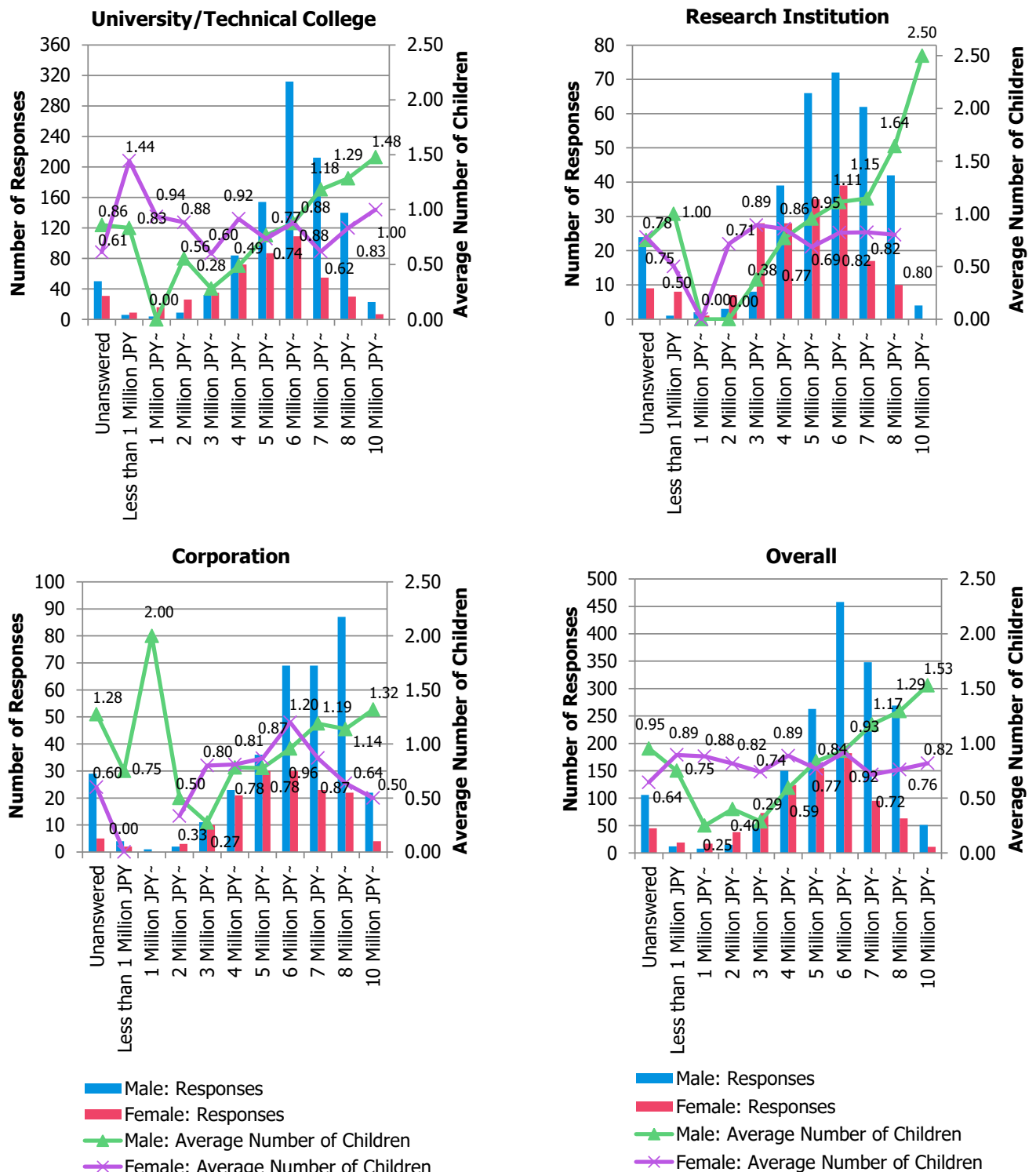


Figure 3.1 Hours Spent at Workplace by Children’s Age Group (Single Answer)

(Figure 3.2) For females, there is very little correlation between annual salary and the number of children, while for males, the number of children increases proportionally with annual salary. This is similar to the third survey (Figure 3.2).



**Figure 3.2 Annual Salary and Number of Children (respondents in their late 30's)
(Single Answer)**

Childcare Leave (Figures 3.3-6)

(Figure 3.3-6) Overall, for females, lower the children's age, higher the numbers of those that take childcare leave. The ratio of females working for corporations that take leave was higher than those working at university/technical college or research institutions. Although the ratio of males that take leave is very low, there was a slight increase compared to the third survey (Figure 3.3).

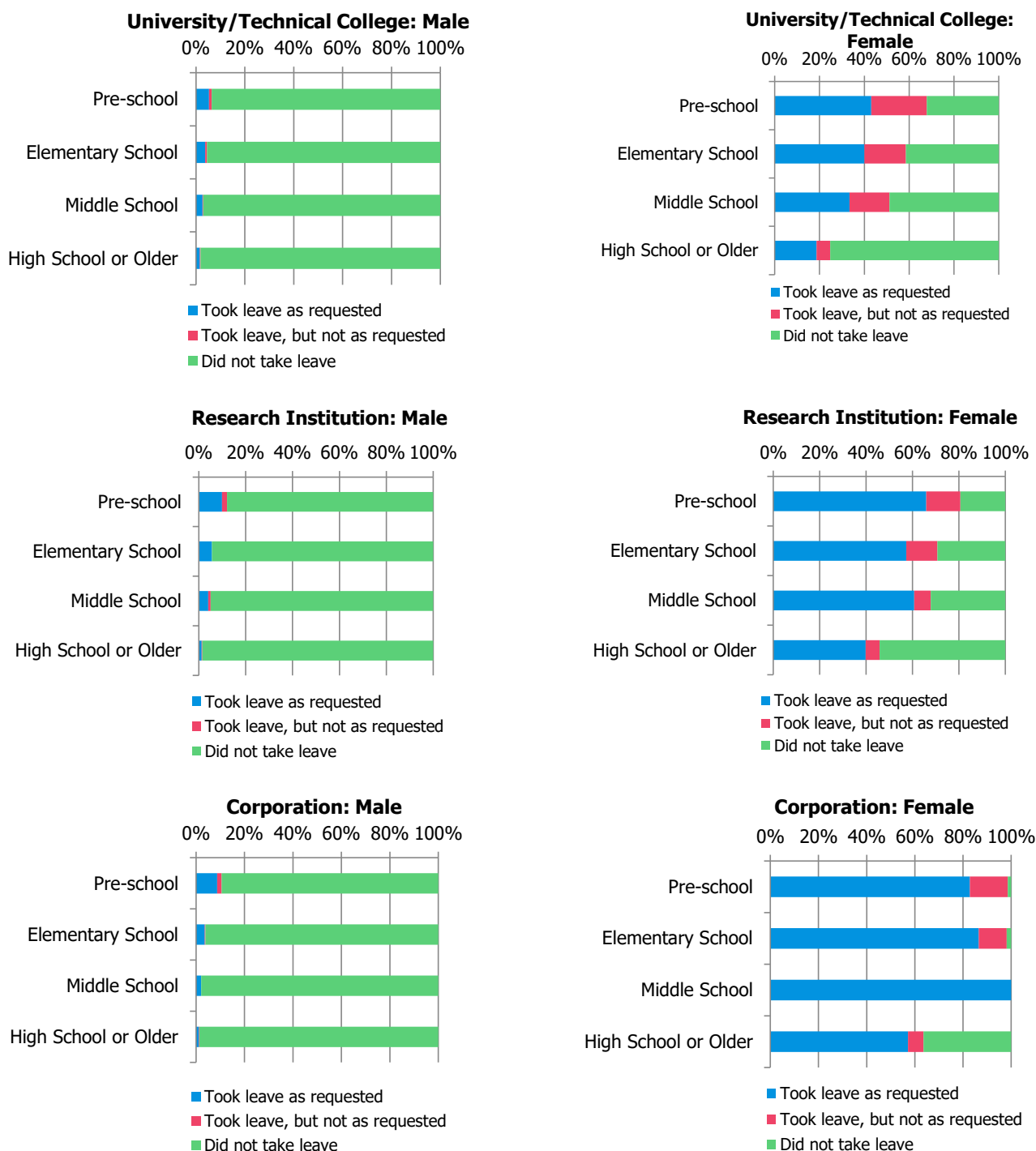


Figure 3.3 Taking Childcare Leave (Single Answer)

Among the parents who have preschool children, when reasons for “did not take leave” and “took leave, but not as requested” were compared by affiliated institution, “workplace environment” was the most common reason (Figure 3.4).

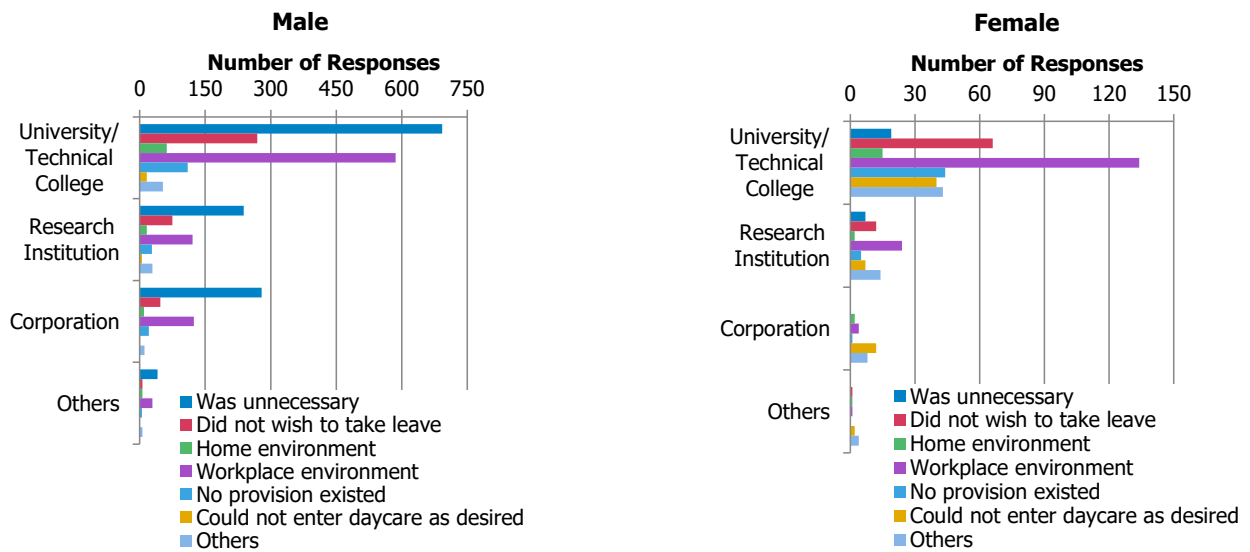


Figure 3.4 Why Parents with Pre-school Children Did Not Take Leave (Multiple Answers)

Furthermore, when reasons for not taking leave were compared by employment status, “did not wish to take leave” was the second-highest for females especially for those under limited-term employment (Figure 3.5). Additionally, comparing the reasons by job position, “workplace environment” was highest for females working as a lecturer or assistant professor at a university/technical college and as a limited-term researcher (Figure 3.6).

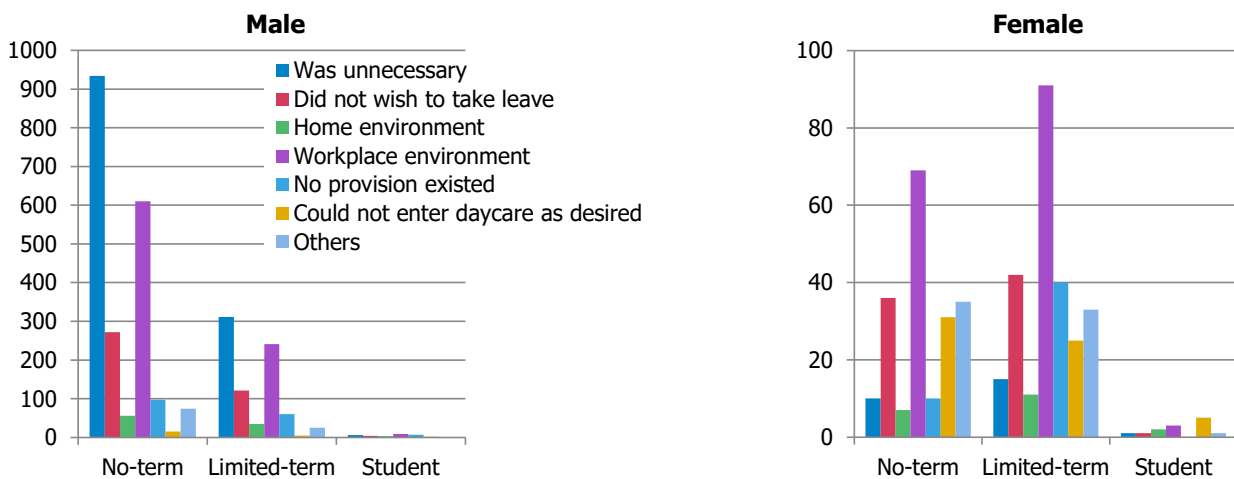


Figure 3.5 Why Parents with Pre-school Children Did Not Take Leave by Employment Status (Multiple Answers)

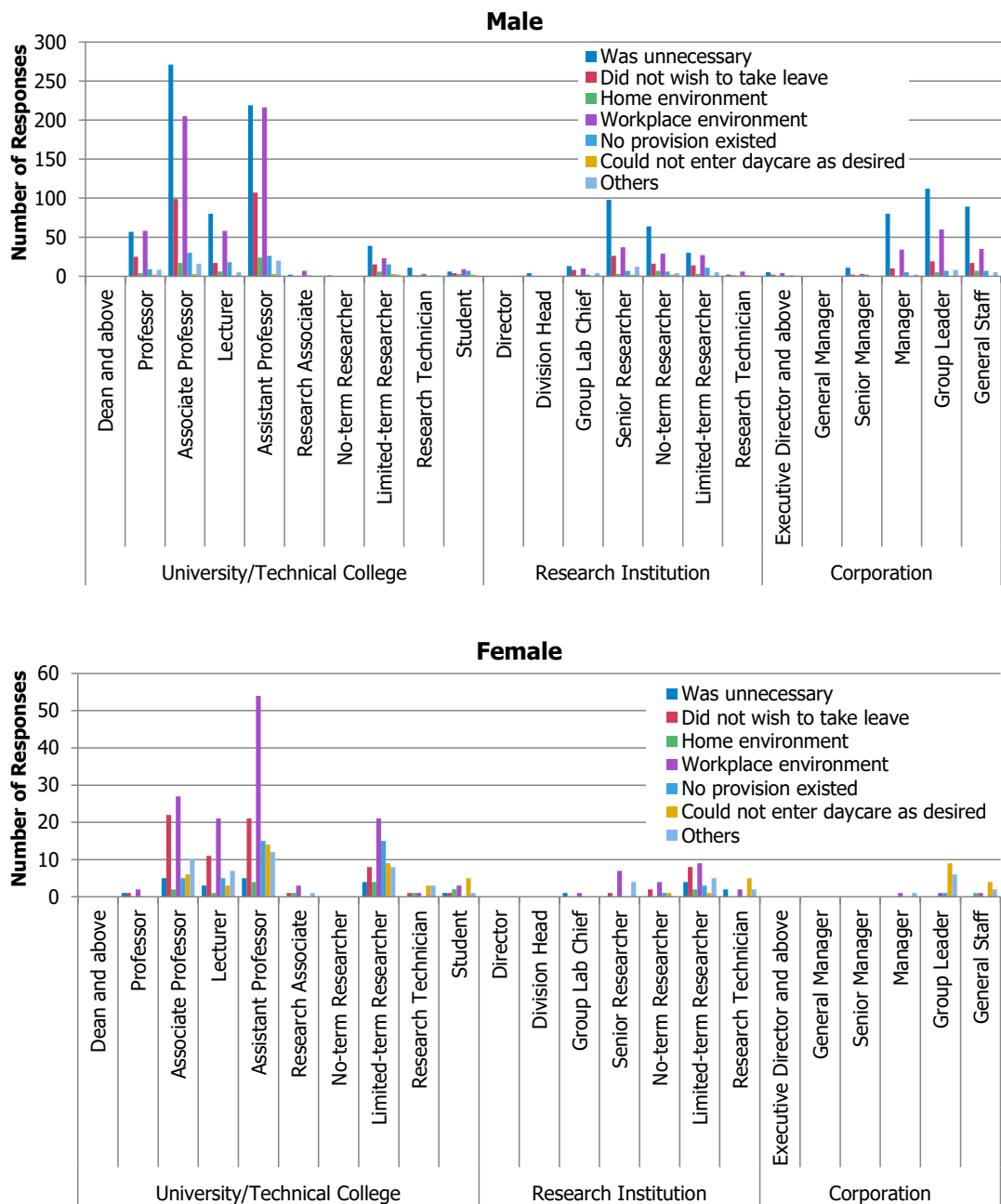


Figure 3.6 Why Parents with Pre-school Children Did Not Take Leave by Job Position (Multiple Answers)

Childcare Support (Figures 3.7-9)

(Figure 3.7) More than 70% of males leave daytime childcare to their spouses, whereas more than 70% of females use day-care centers.

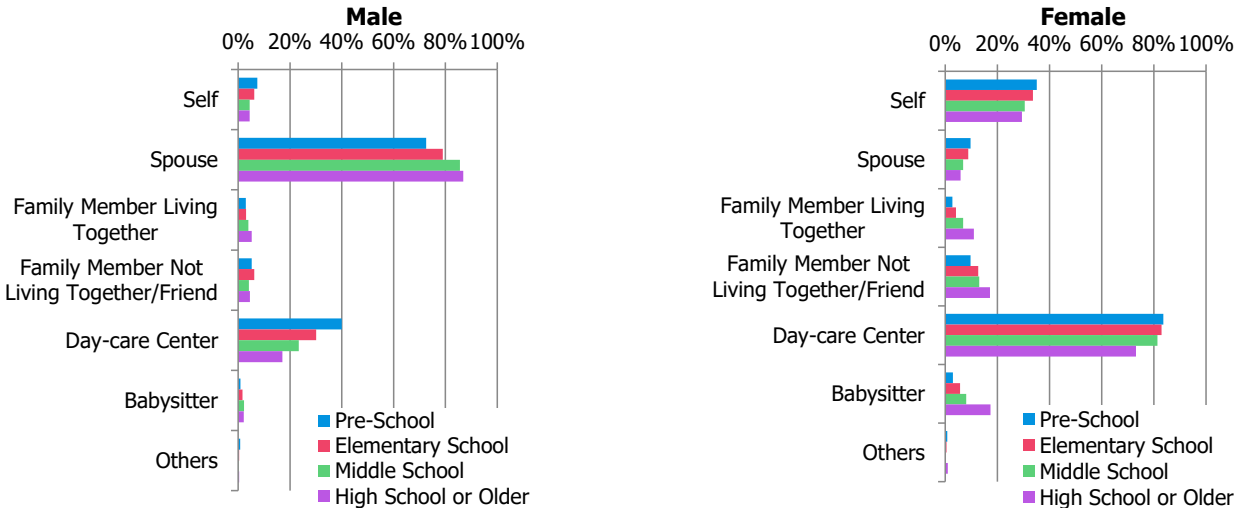


Figure 3.7 Daytime Care Giver of Pre-school Children by Age of Youngest Child (Multiple Answers)

(Figure 3.8) High percentage of males also leaves after-school childcare to their spouses. On the other hand, females use a wide choice of options such as after-school day-care centers.

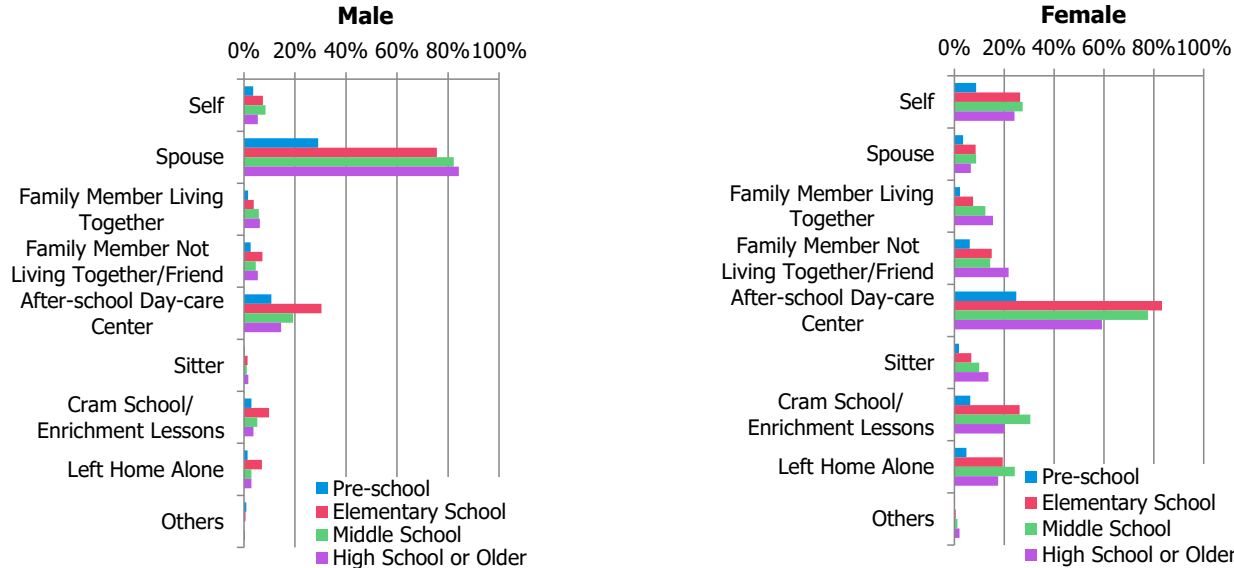


Figure 3.8 After-school Care Giver of Elementary School Children by Age of Youngest Child (Multiple Answers)

(Figure 3.9) When travelling away on business, about 90% of males leave childcare to their spouses, whereas only 50%~60% of females rely on their spouses.

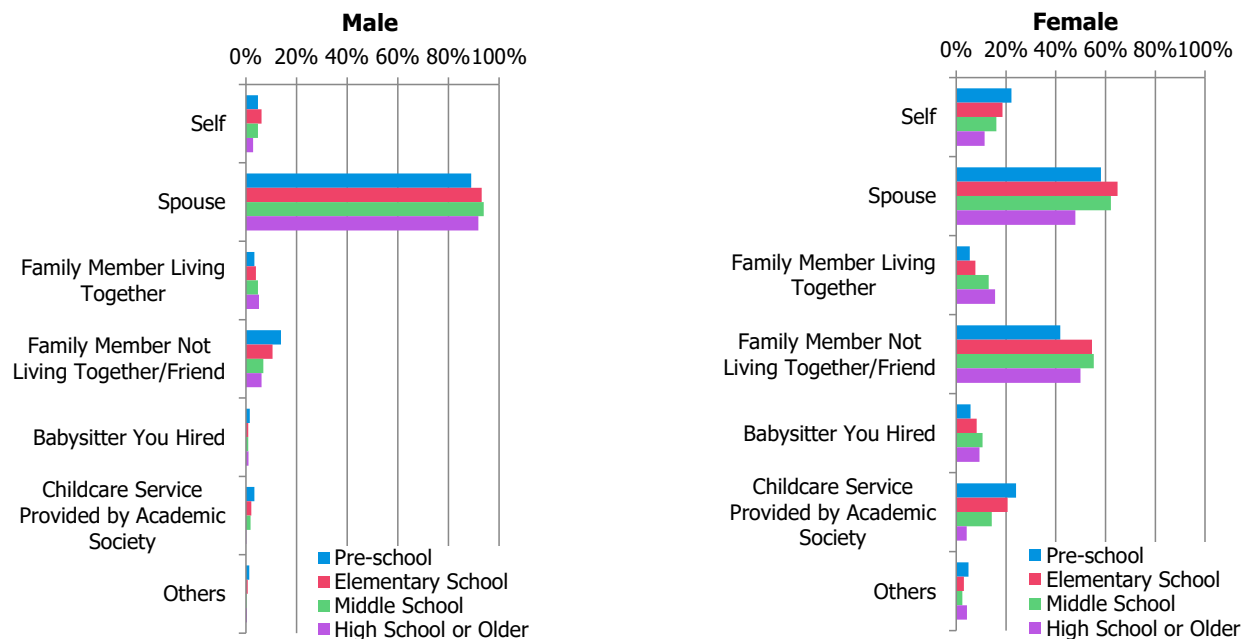


Figure 3.9 Care Giver During Academic Society Functions by Age of Youngest Child (Multiple Answers)

Experience Living Separately and Dual Career Support (Figures 3.10-15)

Among married respondents, 28.3% of males and 49.7% of females have had experience living separately from their spouse.

(Figure 3.10) In case of males, those that never lived separately from their spouses and those that lived six or more years apart have slightly more children than the others. On the other hand, for females, there were no notable differences in the number of children between those with and without separate living experience or the number of years spent apart.

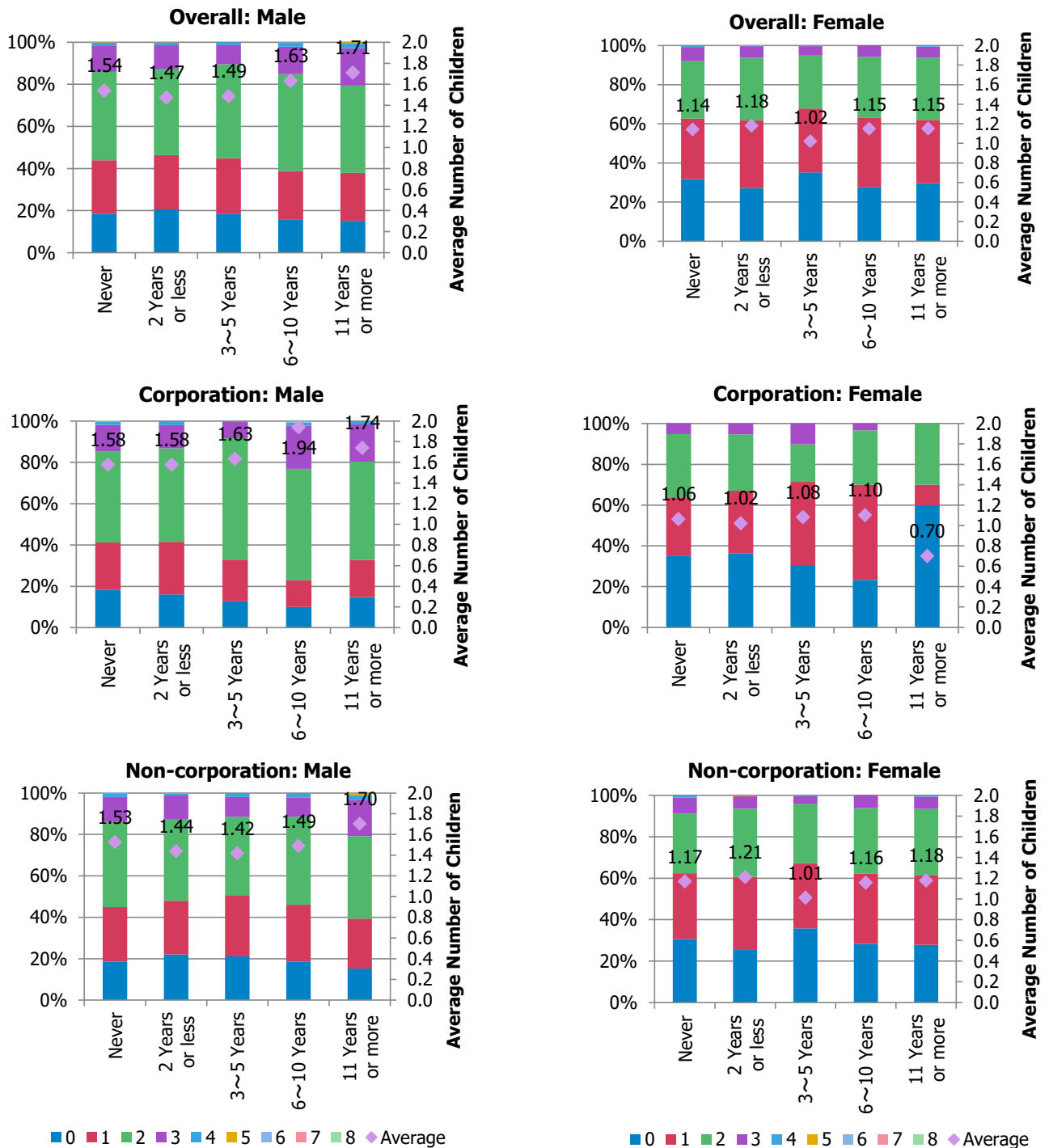


Figure 3.10 Length of Separation and Number of Children (Single Answer)

(Figure 3.11) Males working at public university and research institution have a longer average of years spent living separately compared with others. Females working at universities (public and private) have a longer average than other females. Furthermore, apart from those working for corporations, females spend longer living separately than males.

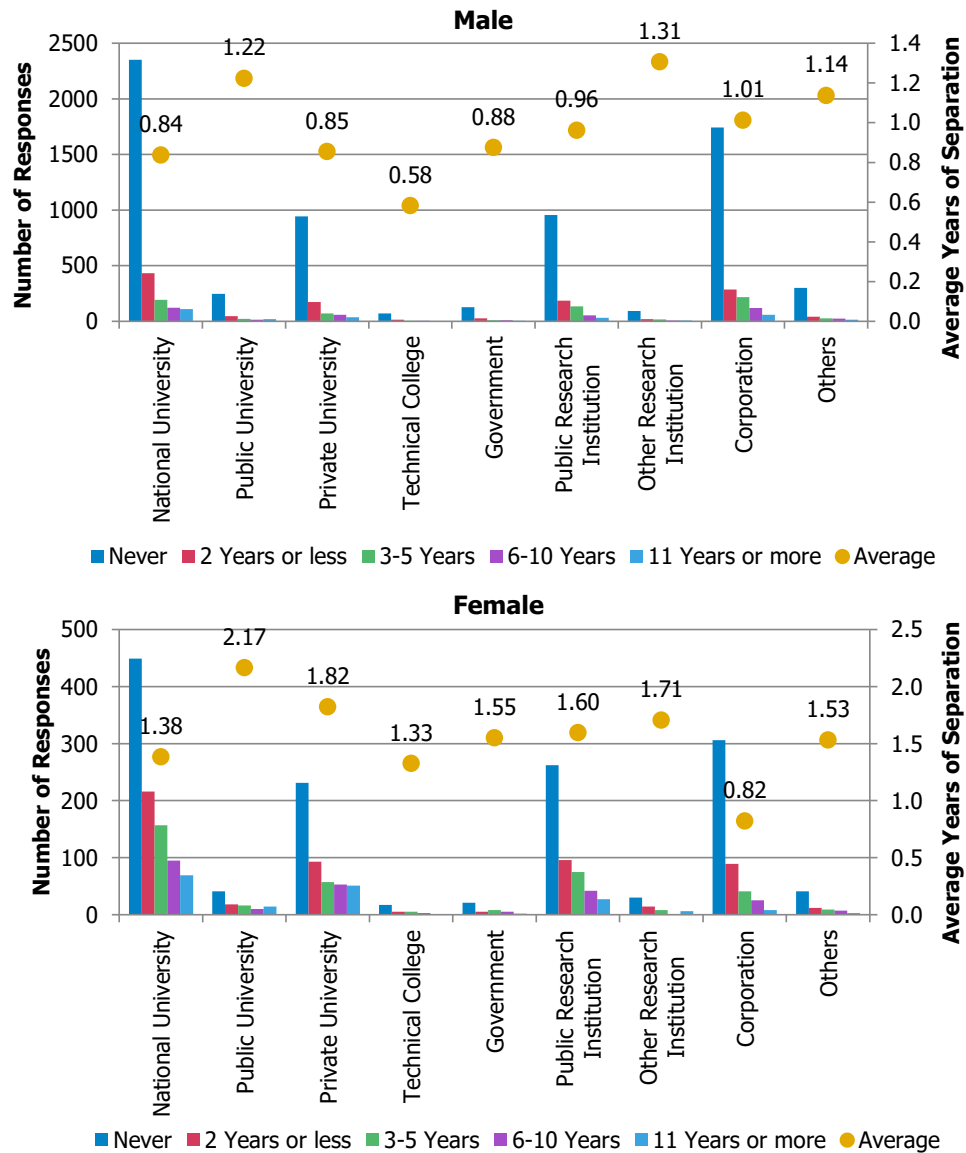


Figure 3.11 Length of Separation by Institution (Single Answer)

(Figures 3.12-13) Forty-seven percent of males did not consider options to avoid living separately from their spouses. Sixty-one percent of females considered options, and as result, half of those were able to avoid separate living. In a comparison according to affiliated institutions, “did not consider” response was received from many respondents working for corporations and government agencies (Figure 3.13).

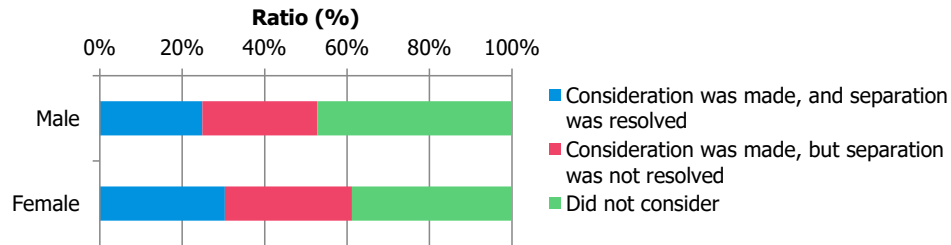


Figure 3.12 Consideration to Eliminate Separation (Single Answer)

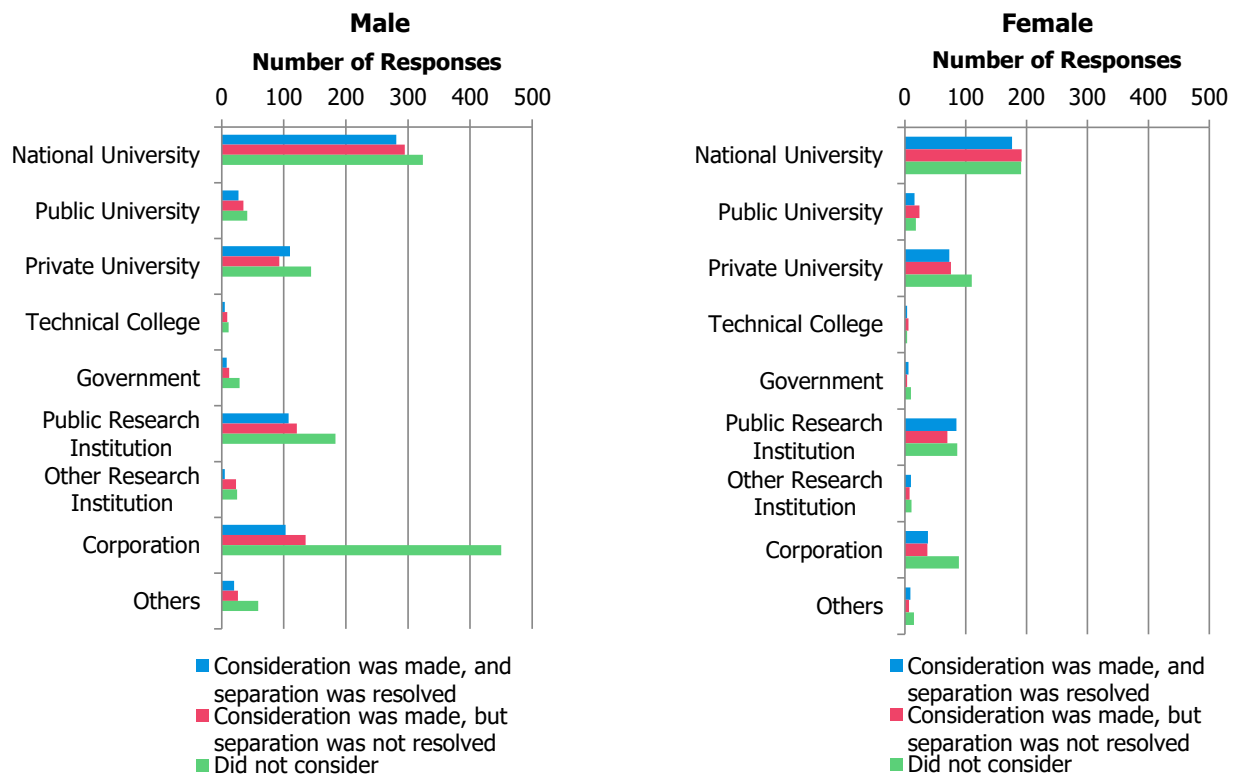


Figure 3.13 Consideration to Eliminate Separation by Institution (Single Answer)

(Figures 3.14-15) Many of the respondents interested in utilizing support programs to keep families together were working in low job positions. Looking at the reasons not wanting to use the support programs for females, “cannot relocate due to work matters” response was the highest regardless of affiliated institution.



Figure 3.14 Use of Dual Career Support Program by Job Position (Single Answer)

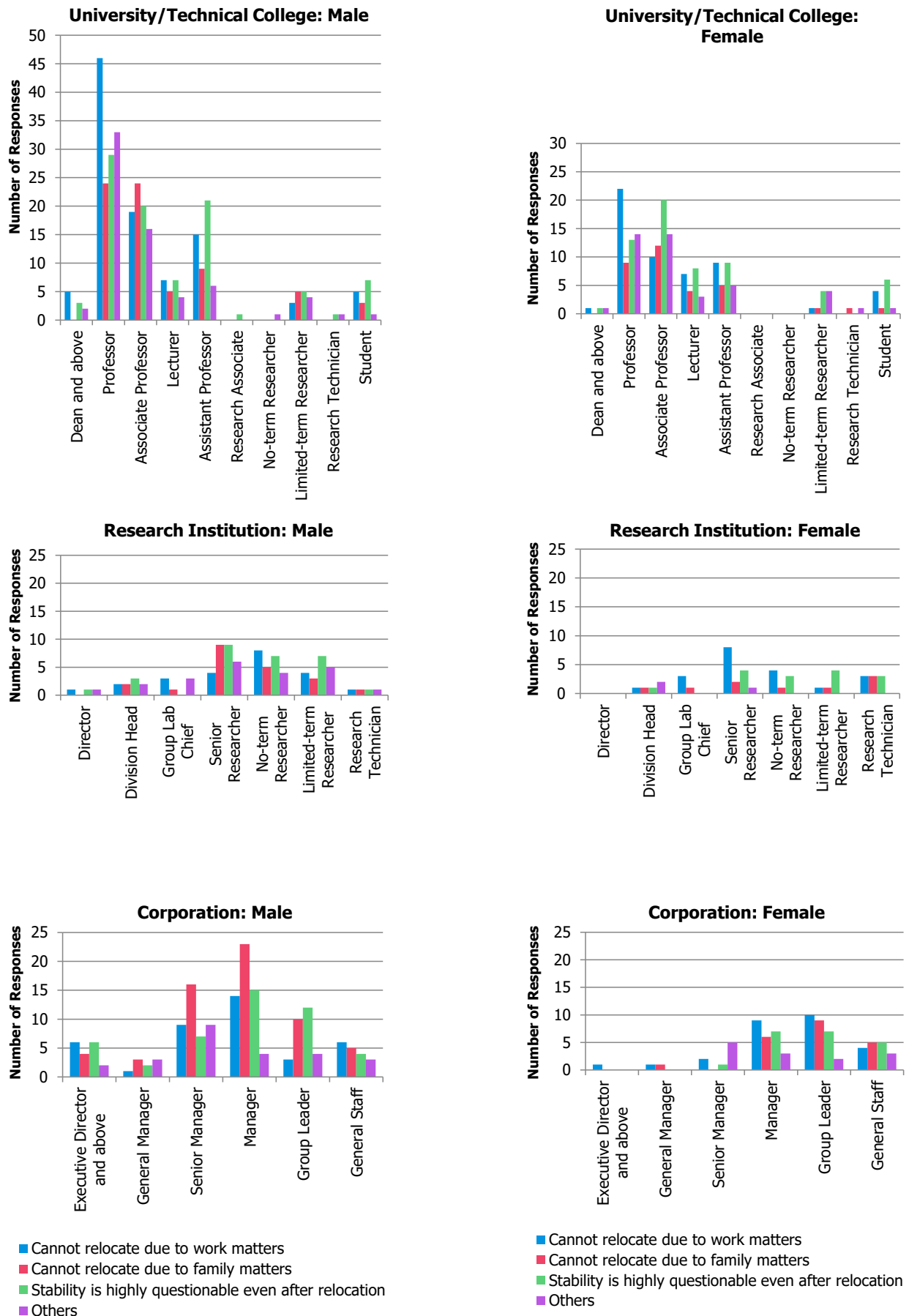


Figure 3.15 Reasons for Not Using Dual Career Support Program (Multiple Answers)

Work and Child/Nursing Cares (Figures 3.16-17)

(Figure 3.16) Number of respondents who have family members requiring nursing care was highest for those in the 60 to 65 age group.

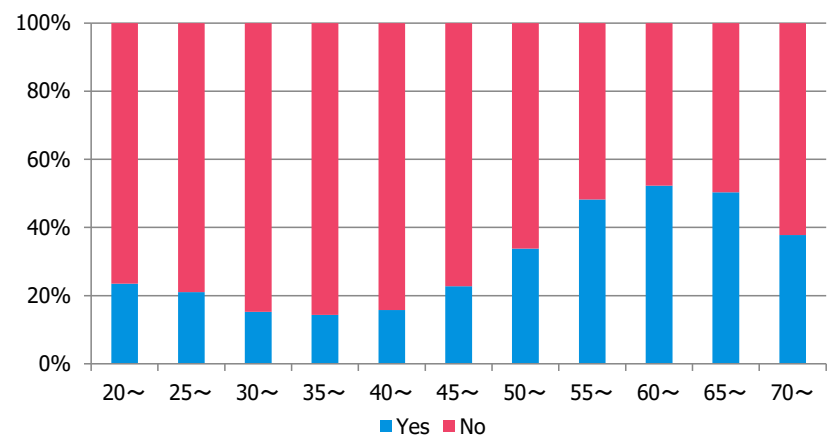
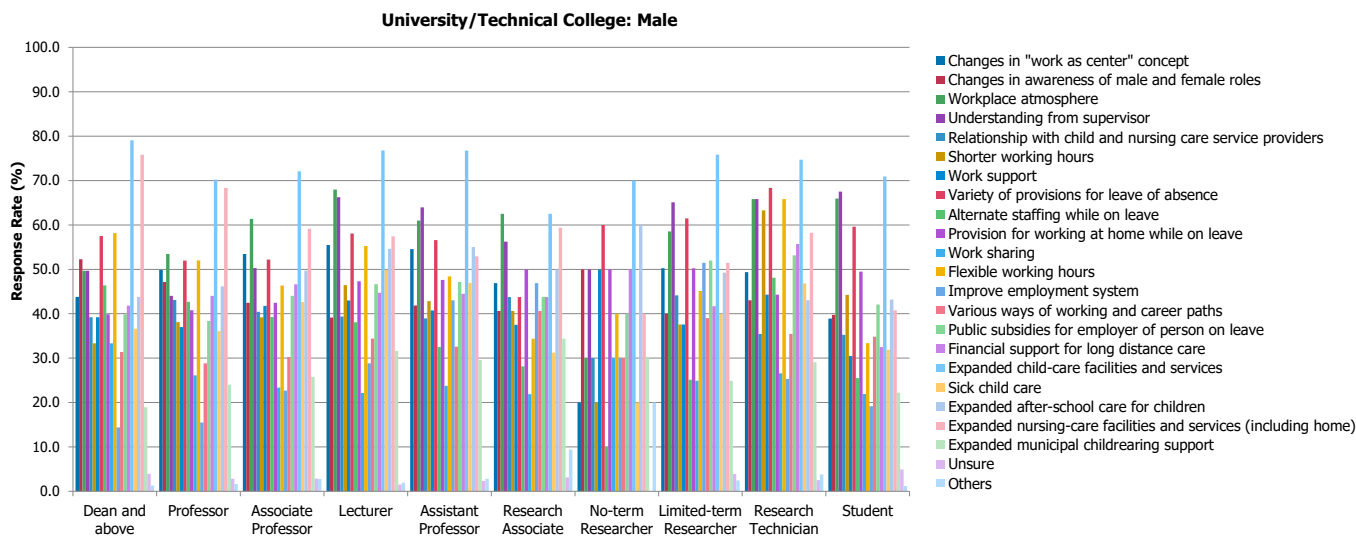
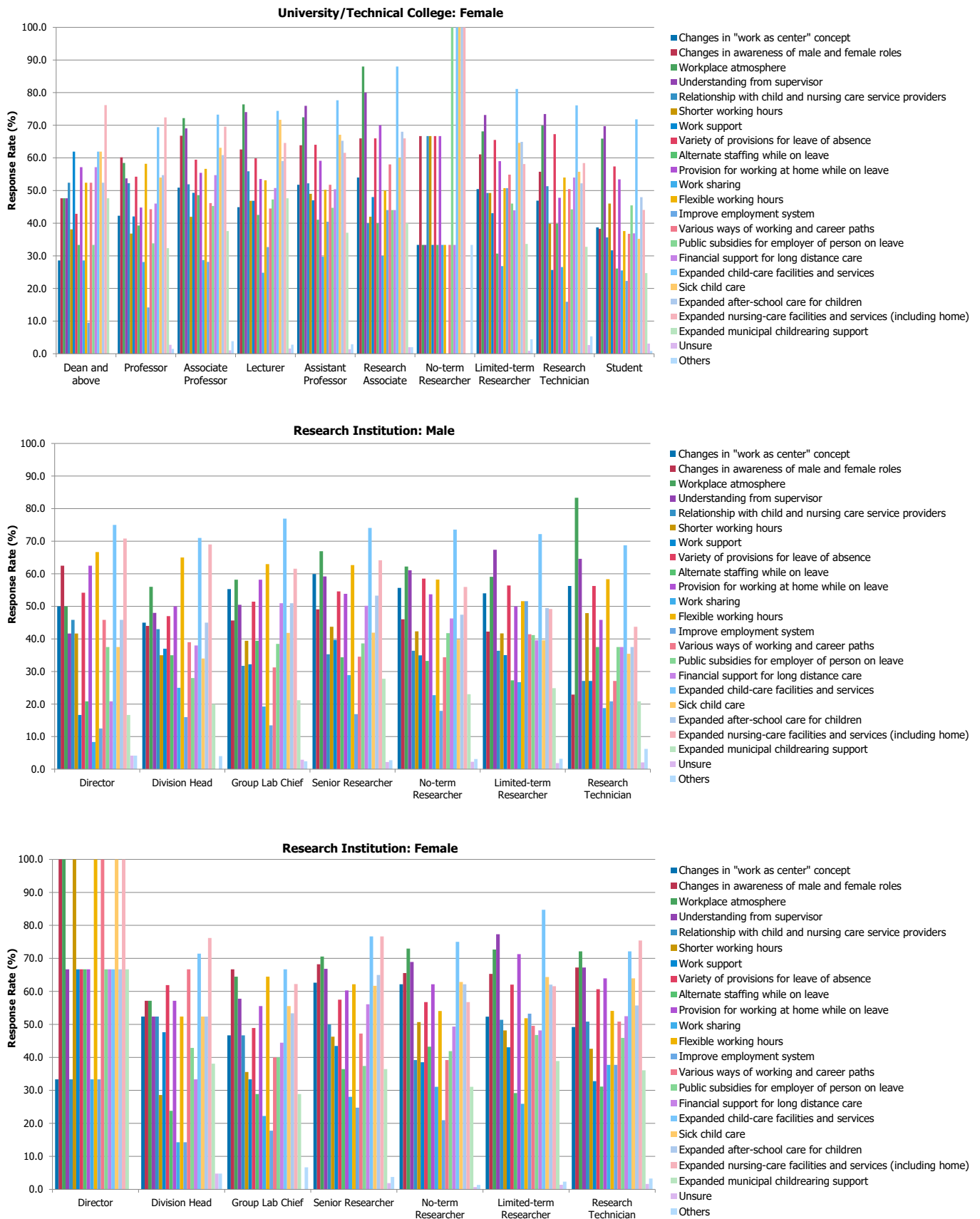


Figure 3.16 People Requiring Nursing Care (Single Answer)

(Figure 3.17) Selection of “expanded child-care facilities and services” received the highest number of responses as the top requirement for balancing work and child/nursing cares from males in most of the job positions. On the other hand, the highest response varied by job position for females.





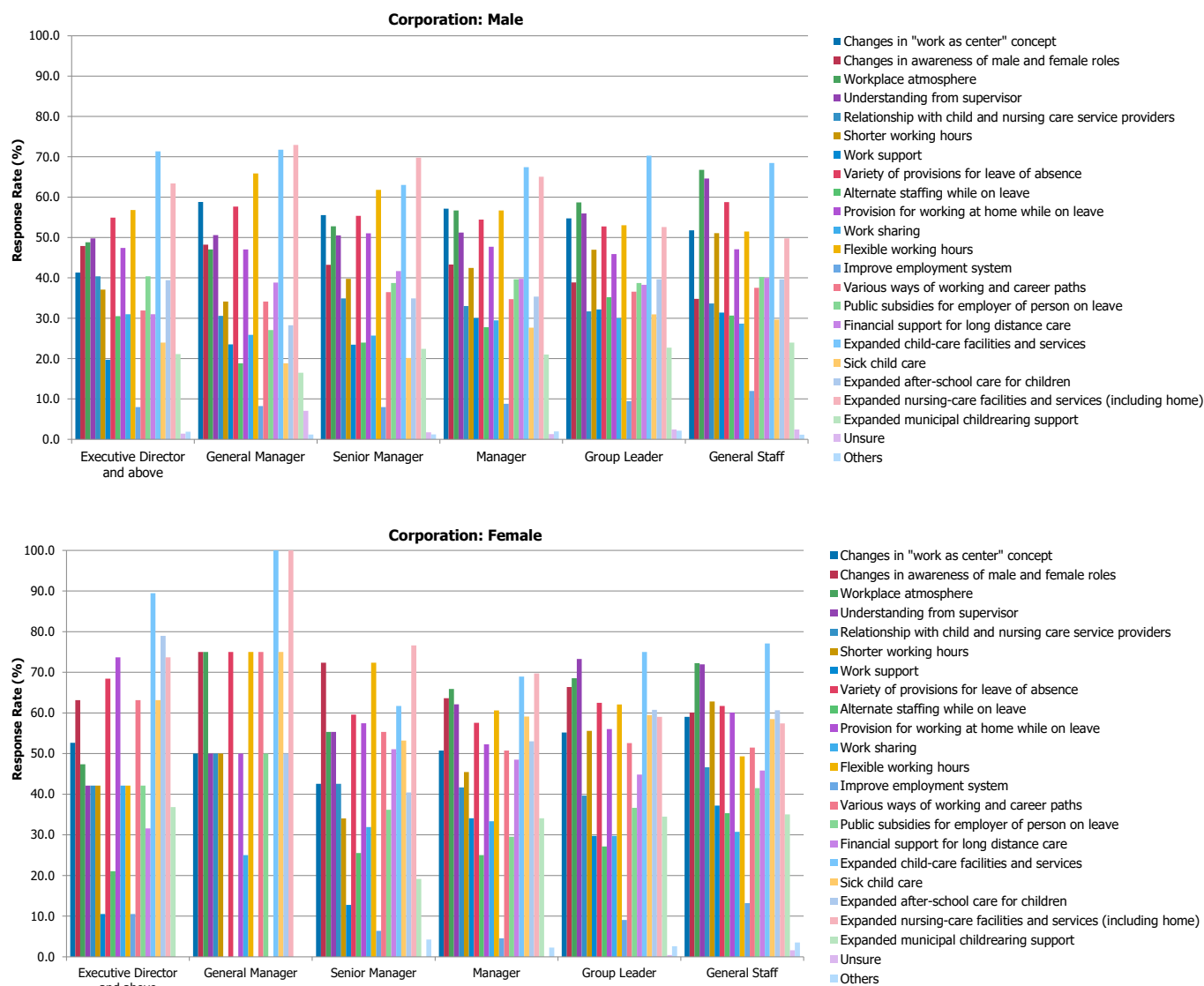


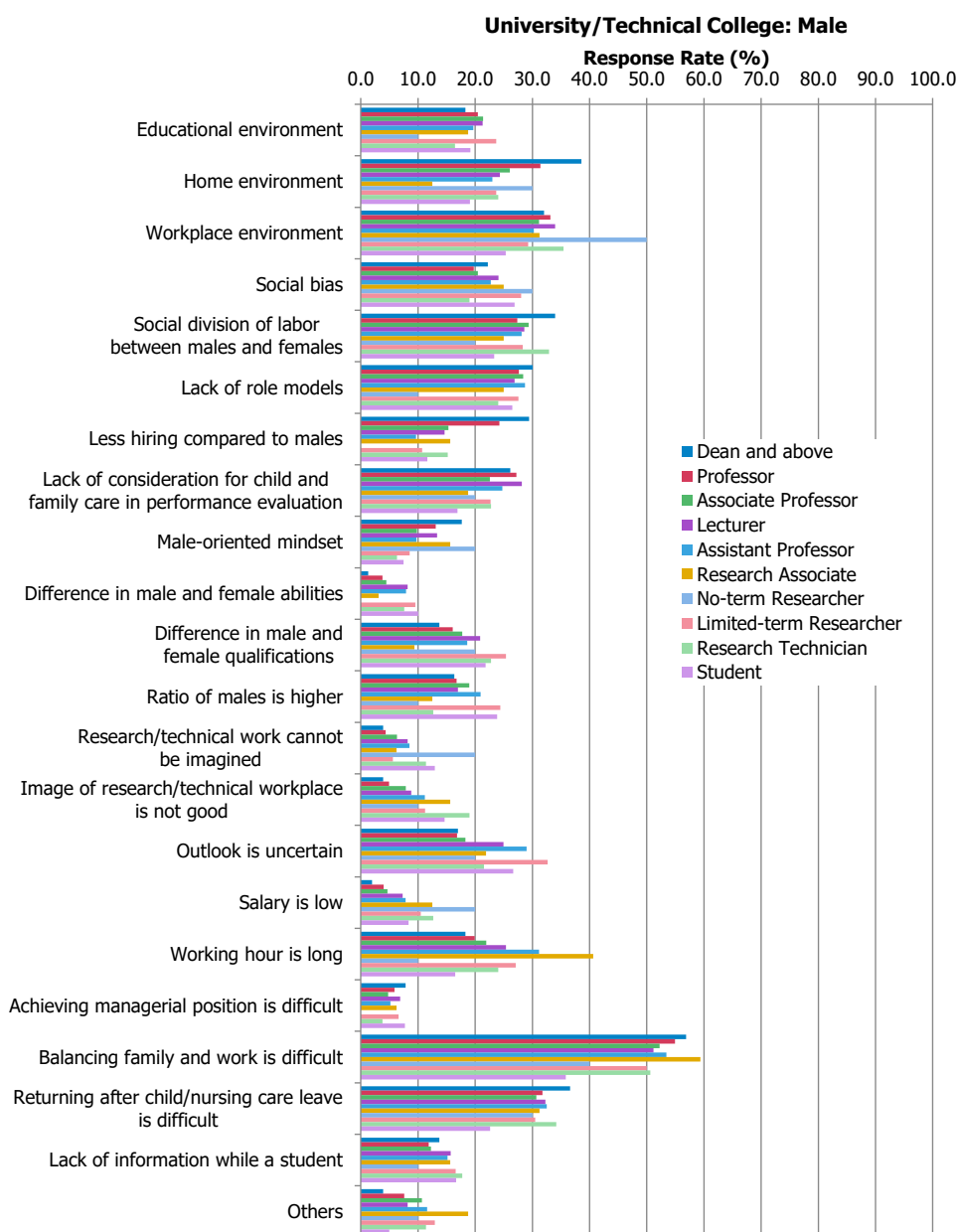
Figure 3.17 Requirements for Balancing Work and Child/Nursing Care (Multiple Answers)

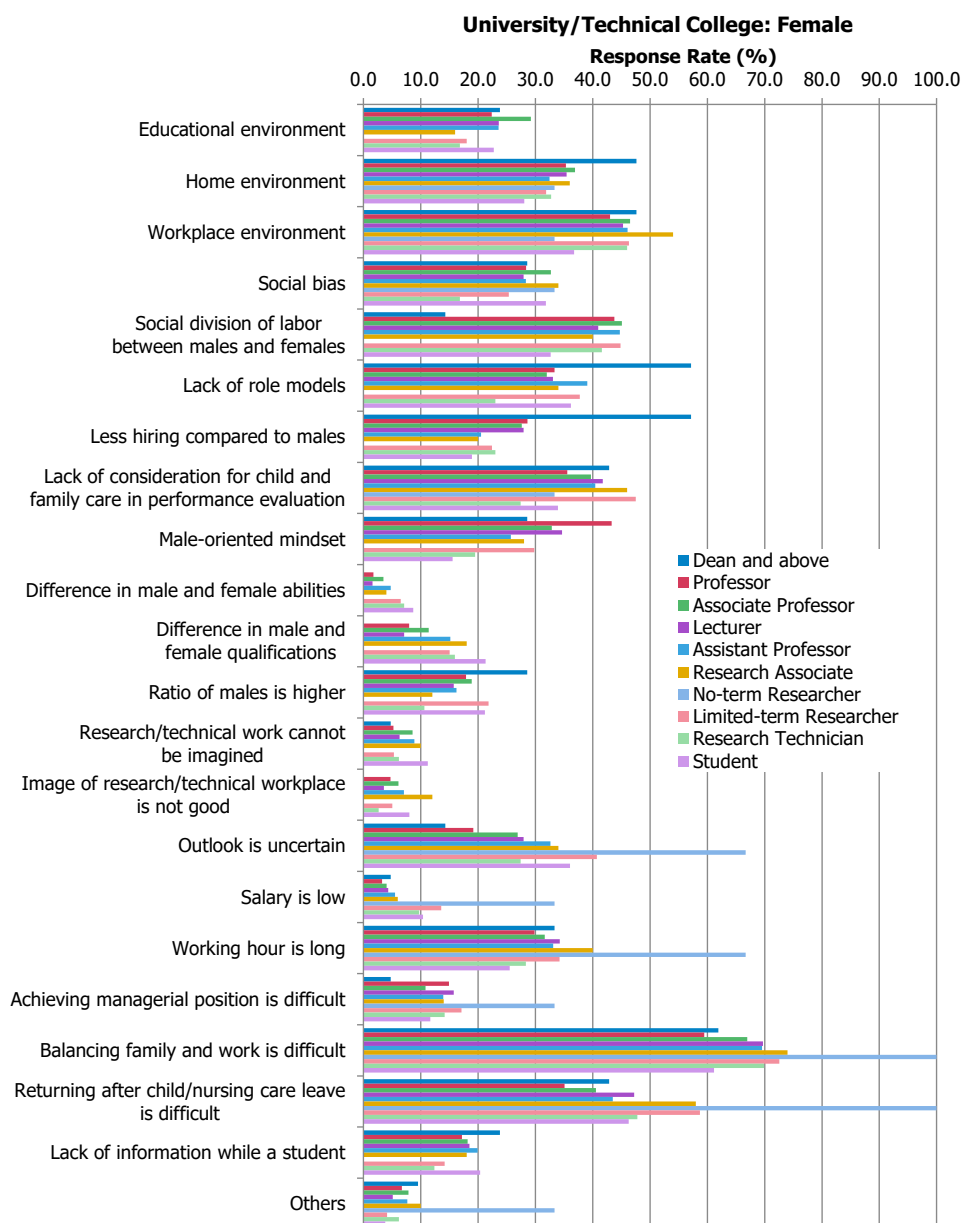
Requirements for Further Promoting Gender Equality (Figures 3.18-20)

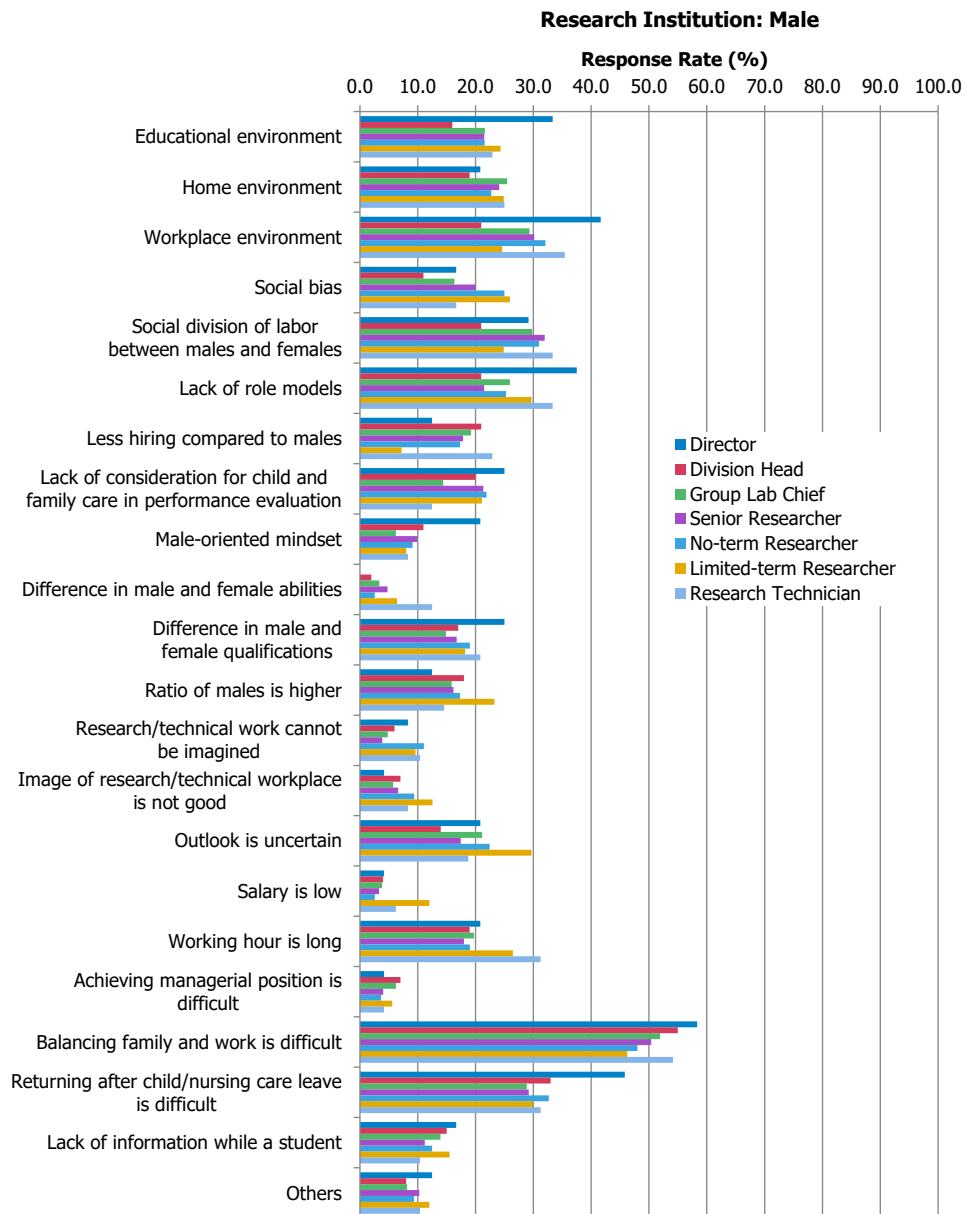
(Figure 3.18) In university/technical college, males cited “balancing family and work is difficult” as the highest reason to why the proportion of females in science and technology fields is low. Although the female responses show almost the same trend as males, many of the available choices had a higher response ratio than males. “Image of research/technical workplace is not good” choice was selected by students and research associates.

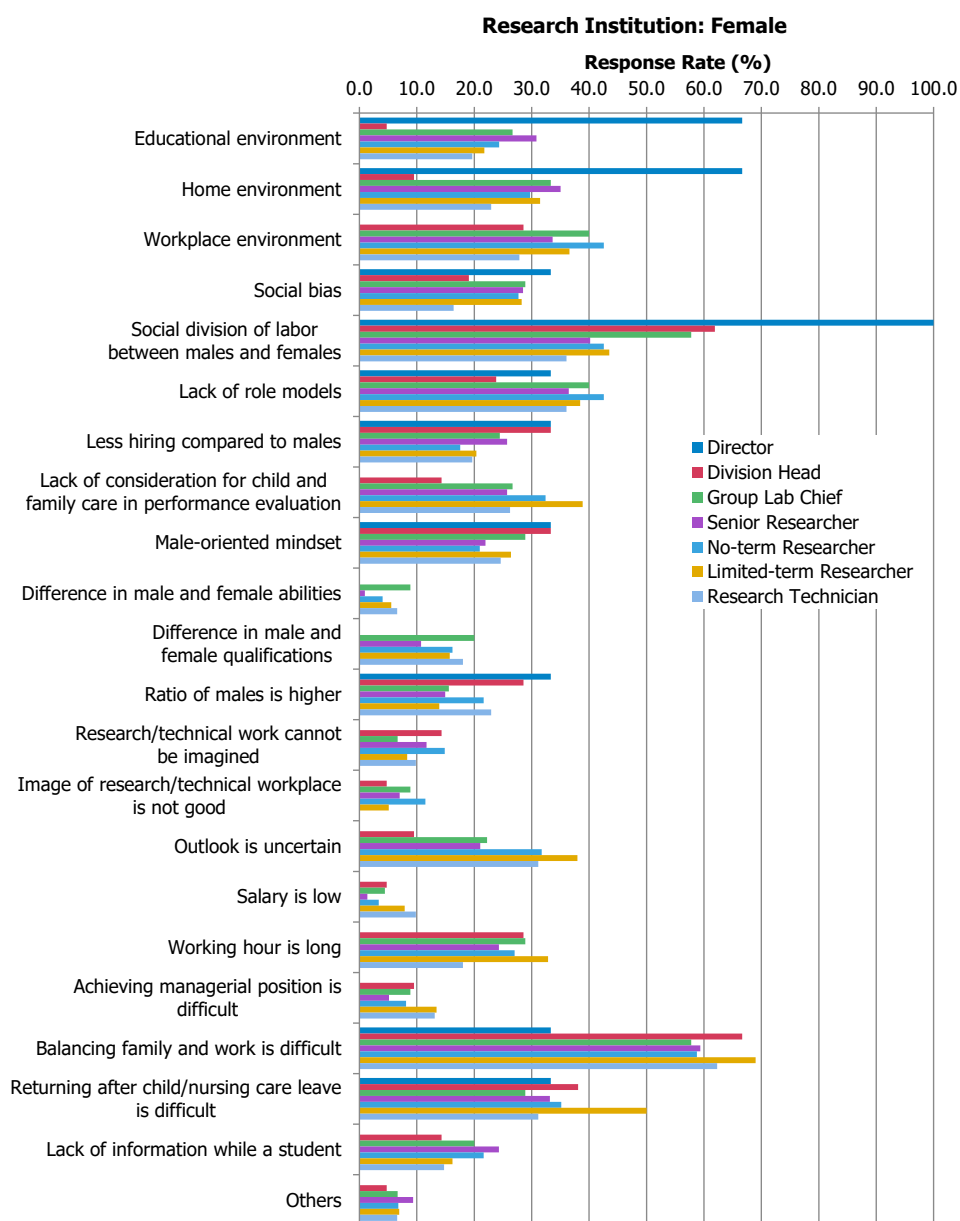
In research institution, the selection trend of responses was similar for both genders, and “balancing family and work is difficult” and “returning after child/nursing care leave is difficult” had a high percentage of responses.

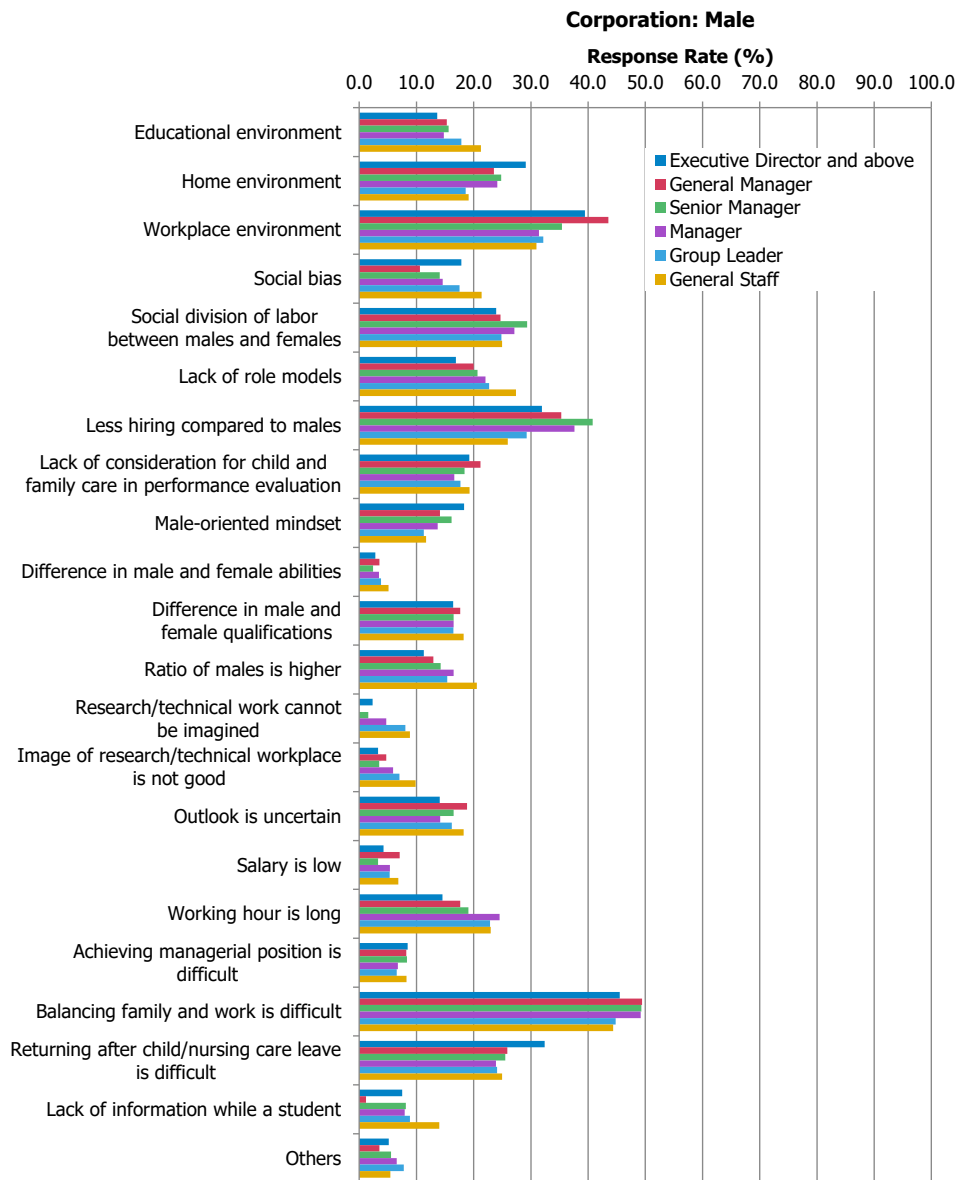
In corporation, “returning after child/nursing care leave is difficult” was the most frequent response from both genders. For females, the fact that “workplace environment”, “social division of labor between males and females” and “male-oriented mindset” response ratios were higher than “returning after child/nursing care leave is difficult” for the same job position was notable.











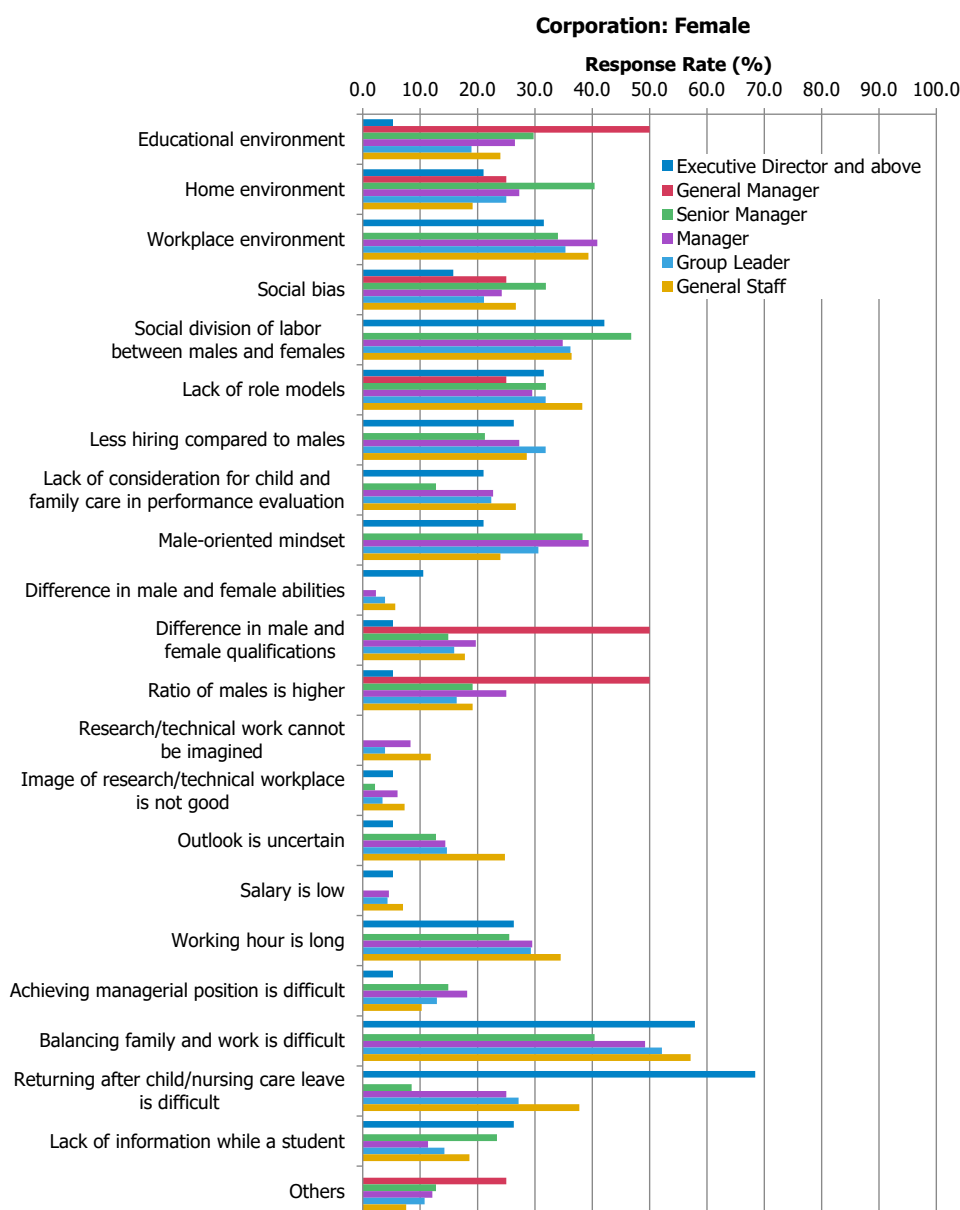
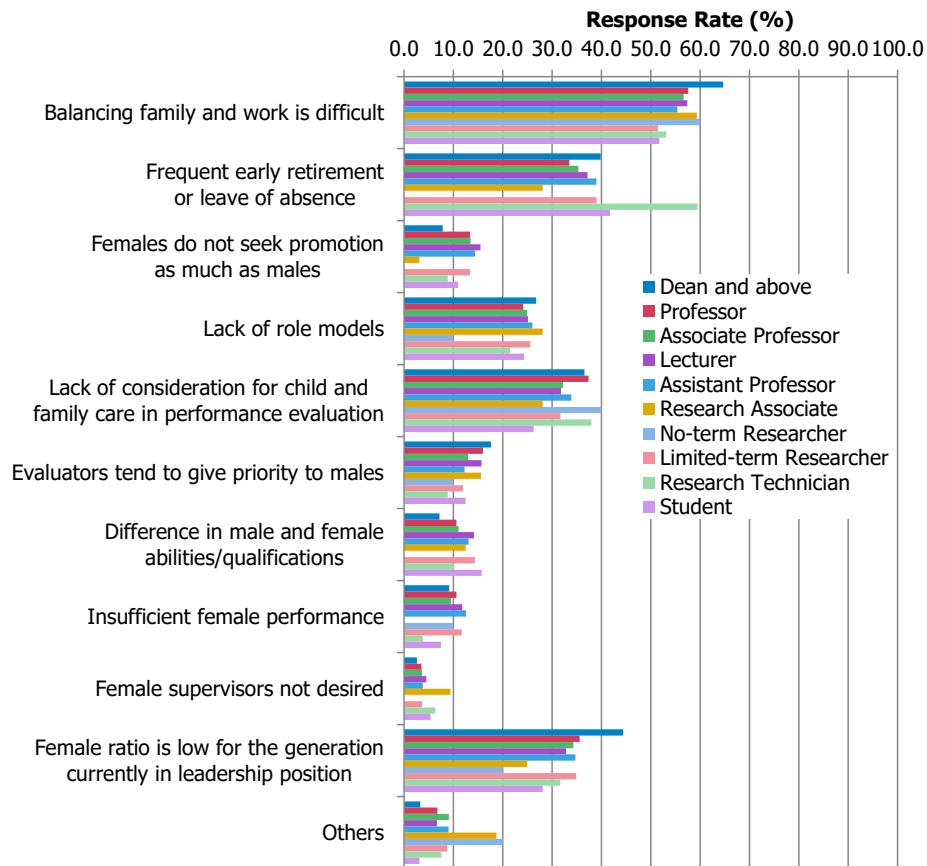
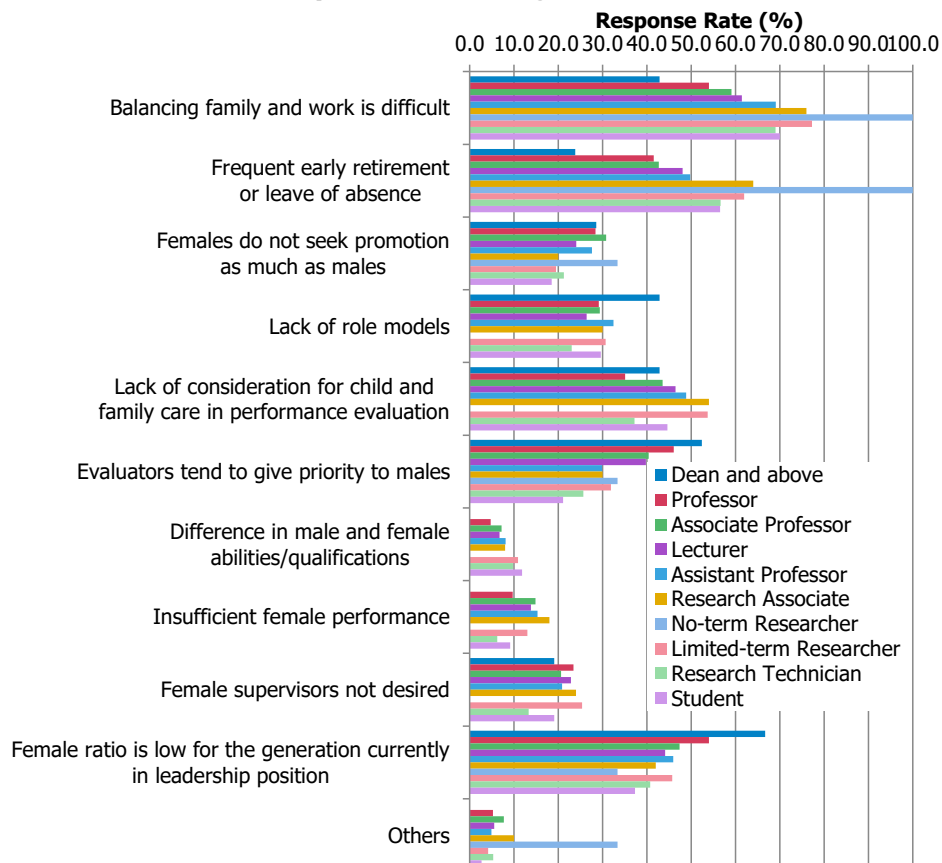
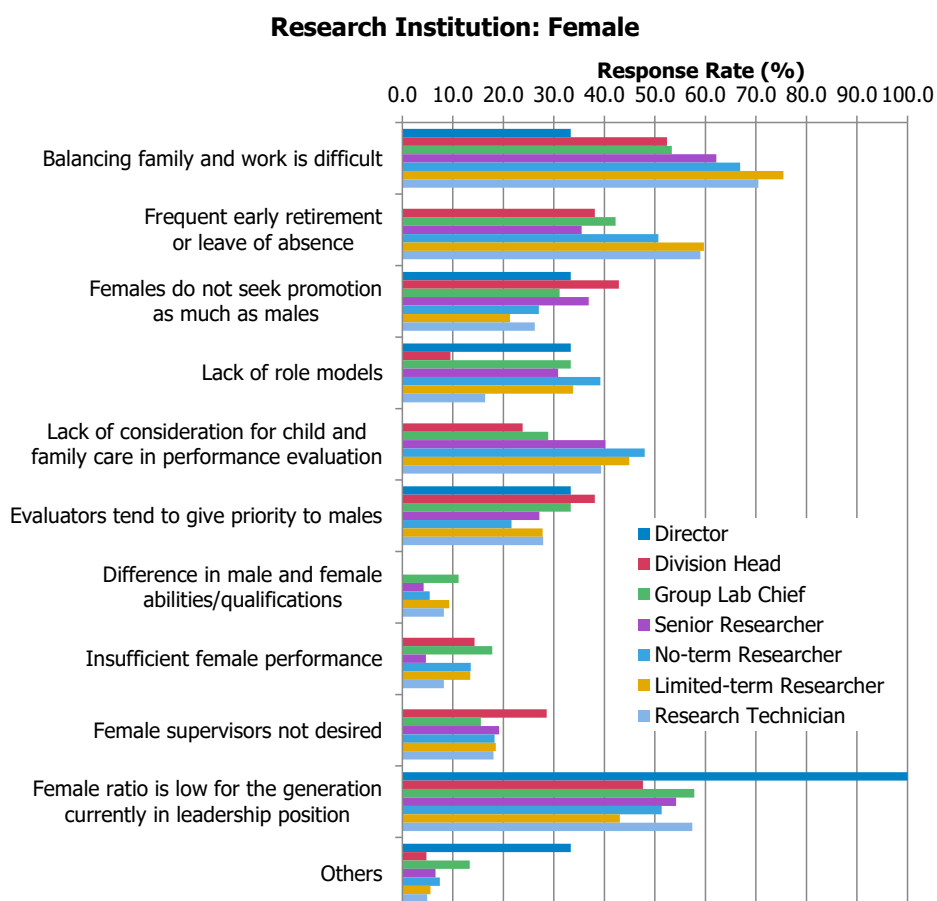
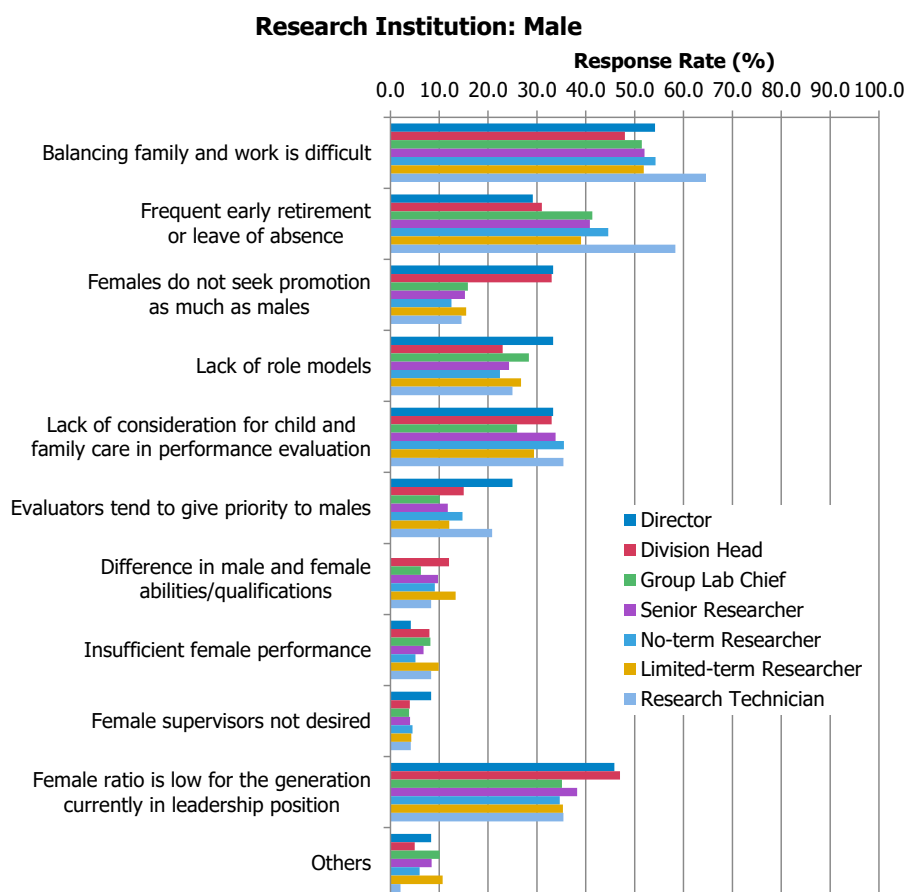


Figure 3.18 Reasons for Low Proportion of Females in Science and Technology Fields in General (Multiple Answers)

(Figure 3.19) In university/technical college, many males believe “balancing family and work is difficult” and “frequent early retirement or leave of absence” to be the reasons for the low proportion of females in science and technology leadership positions. In addition to the previous two, females frequently cited other reasons such as “female ratio is low for the generation currently in leadership position”.

In research institution and corporation, “balancing family and work is difficult” and “frequent early retirement or leave of absence” were again the top reasons cited by both genders, and in case of females, “female ratio is low for the generation currently in leadership position” too was selected by all response groups.

University/Technical College: Male**University/Technical College: Female**



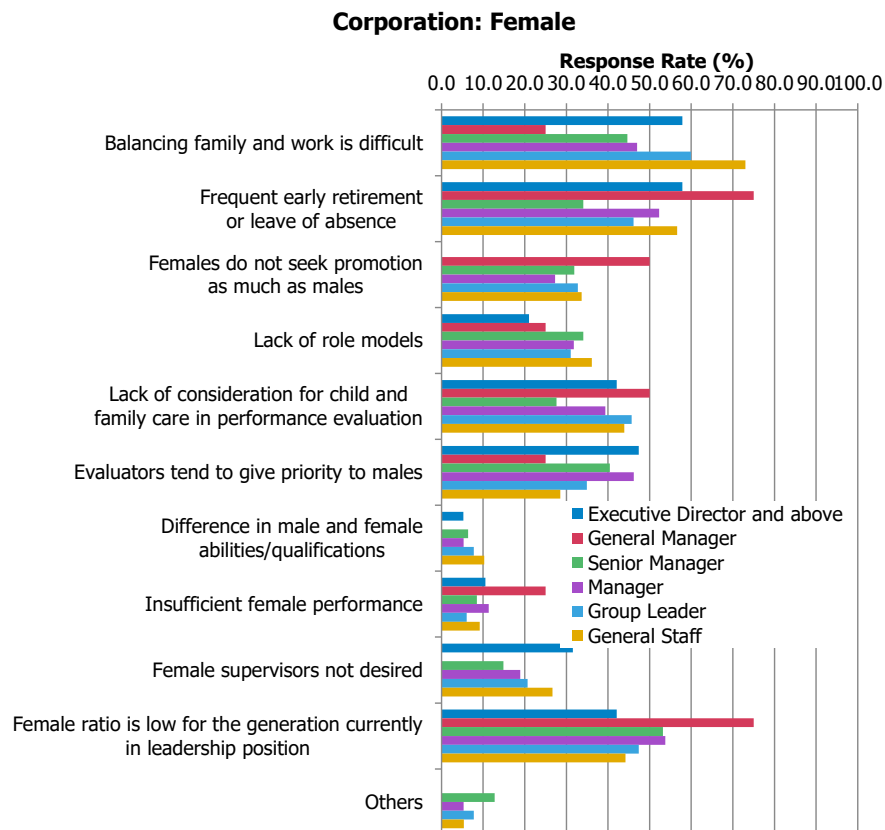
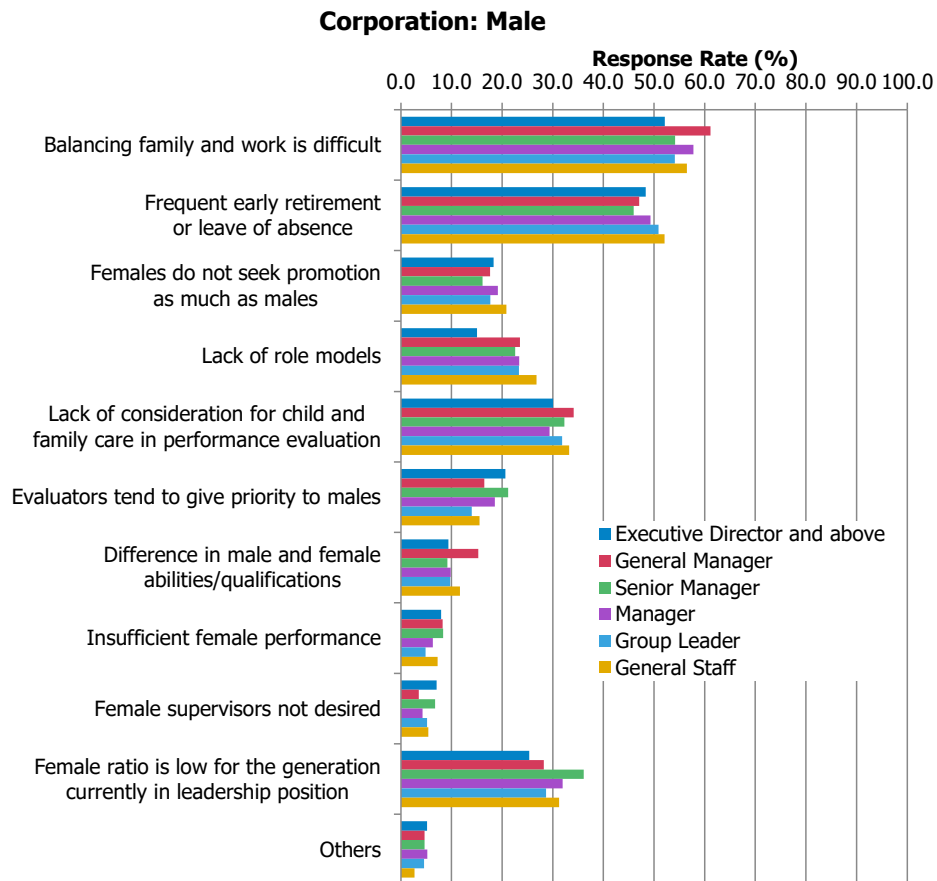


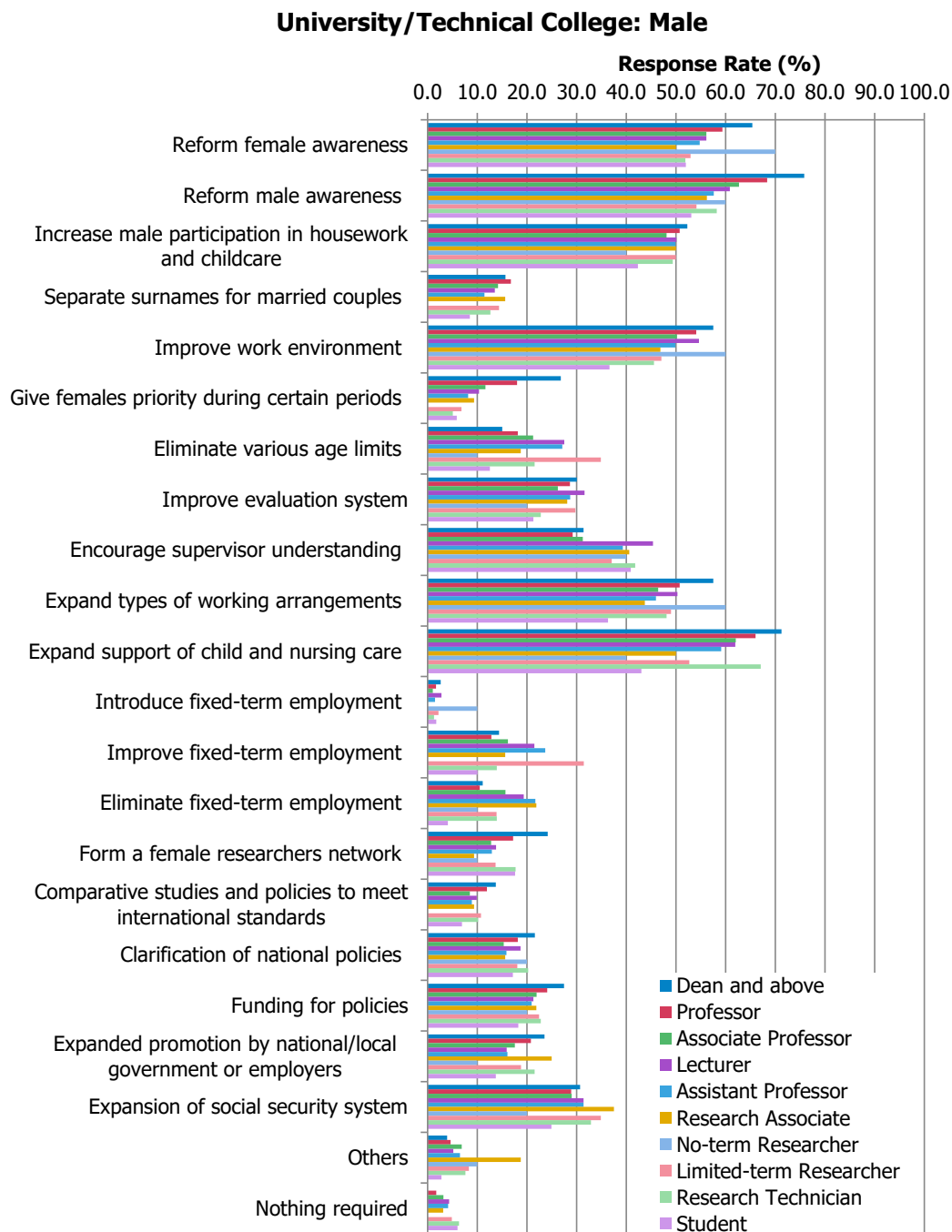
Figure 3.19 Reasons for Low Proportion of Females in Leadership Positions in Science and Technology Fields (Multiple Answers)

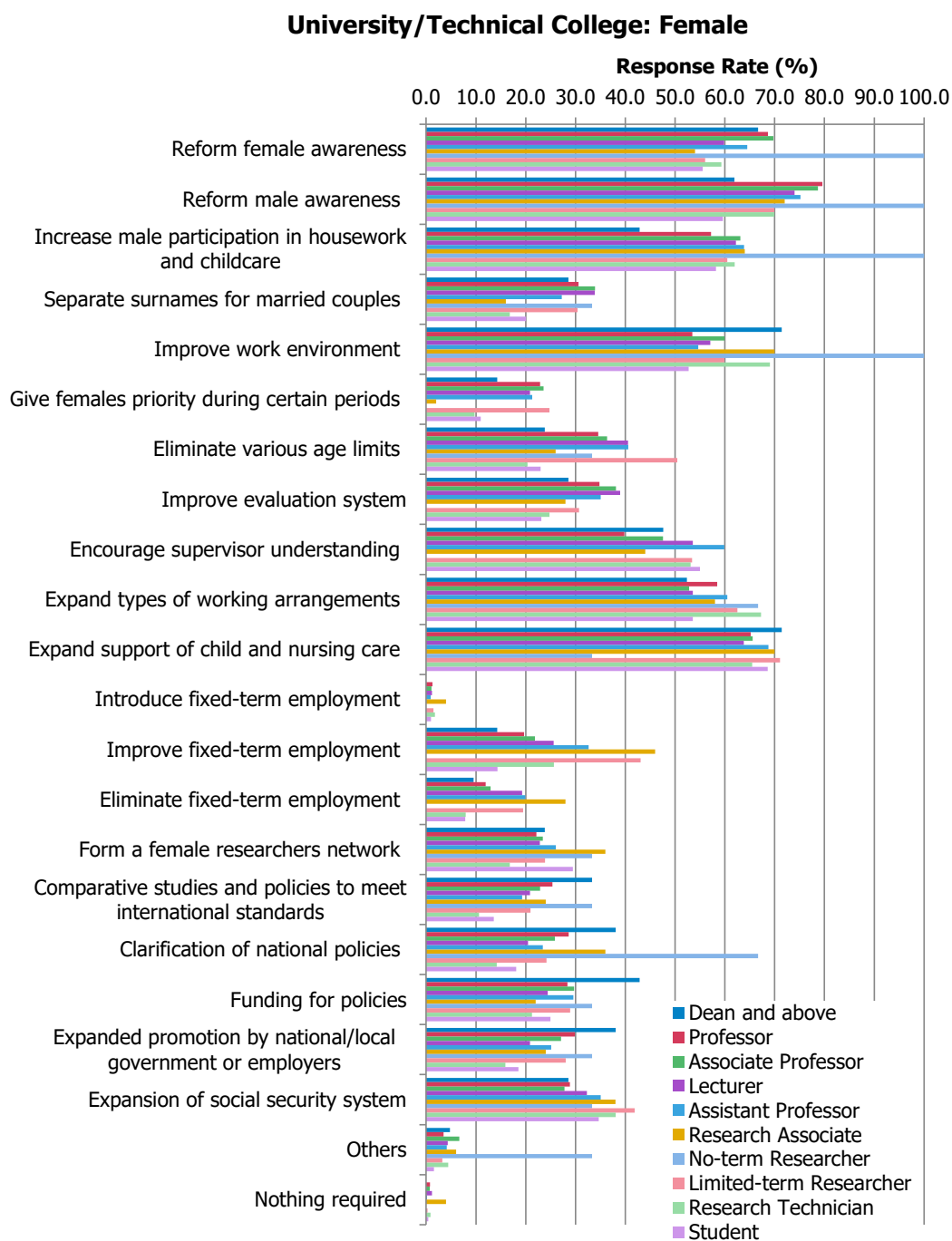
It should be noted that the “evaluators tend to give priority to males” reason was selected more by females, particularly those in high job positions, than males (Table 3.1).

Table 3.1 Top Three Job Positions with the Highest “Evaluators tend to give priority to males” Response Ratio (%)

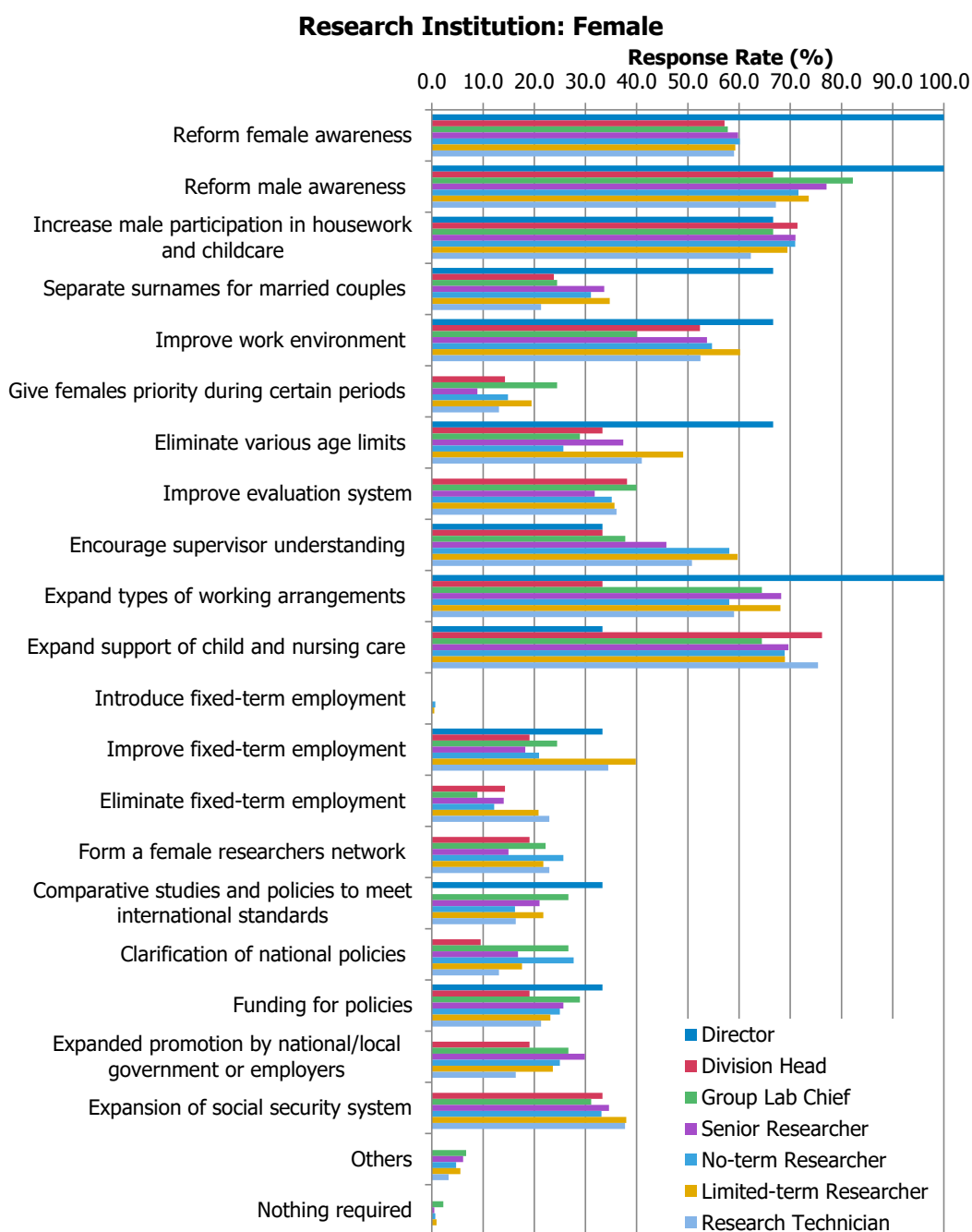
Affiliated Institution	Male			Female		
University/Technical College	Dean	Professor	Lecturer	Dean	Professor	Associate Professor
	17.6	16.0	15.7	52.4	46.0	40.4
Research Institution	Director	Research Technician	Division Head	Division Head	Director	Group Lab Chief
	25.0	20.8	15.0	38.1	33.3	33.3
Corporation	Senior Manager	Executive Director	Manager	Executive Director	Manager	Senior Manager
	21.2	20.7	18.5	47.4	46.2	40.4

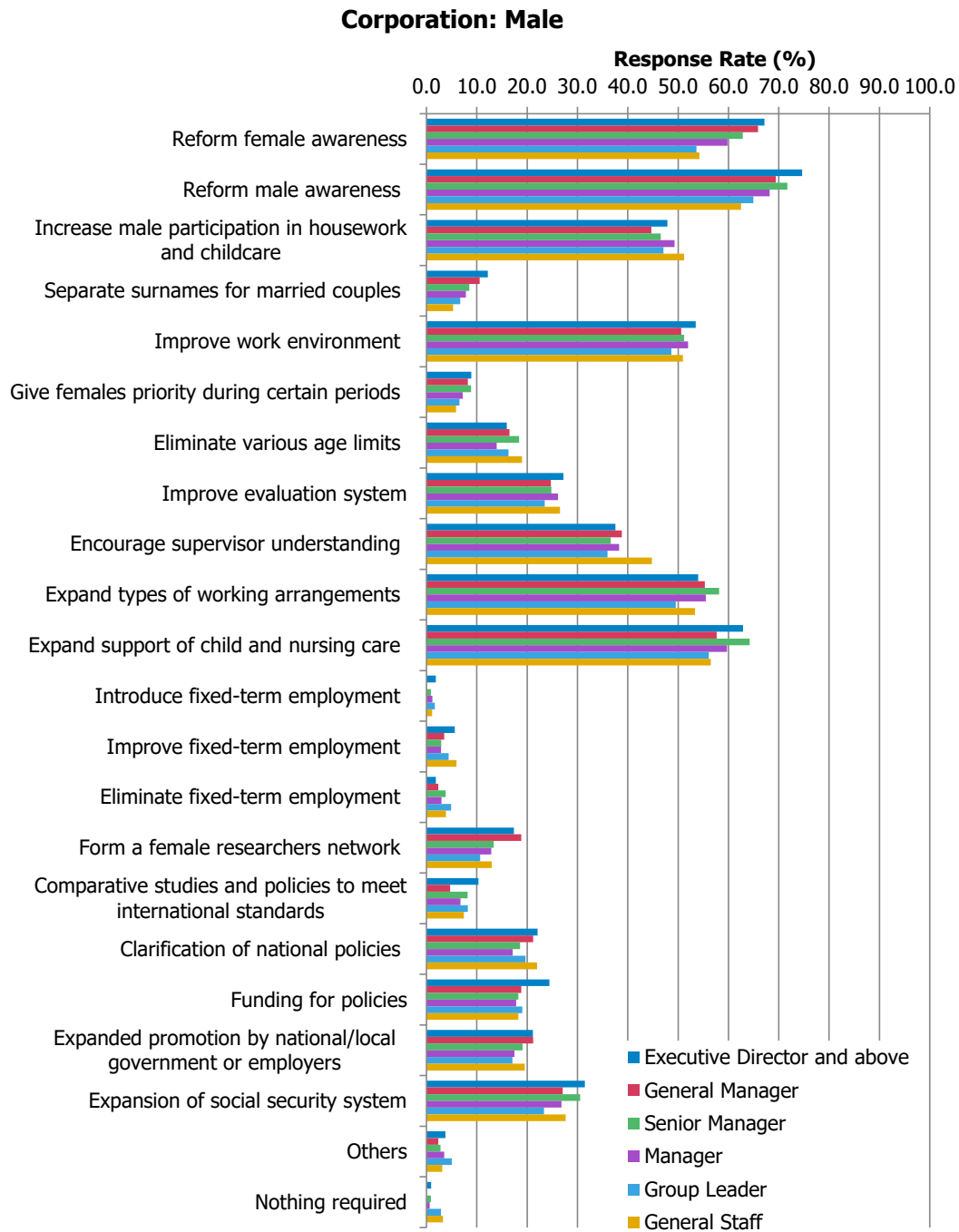
(Figure 3.20) Overall, the selection trend is essentially the same by job position and gender, and the selection ratios of females are much higher than those of males. It should be noted that the male response ratio for “reform male awareness” was higher than the ratio for “reform female awareness”.











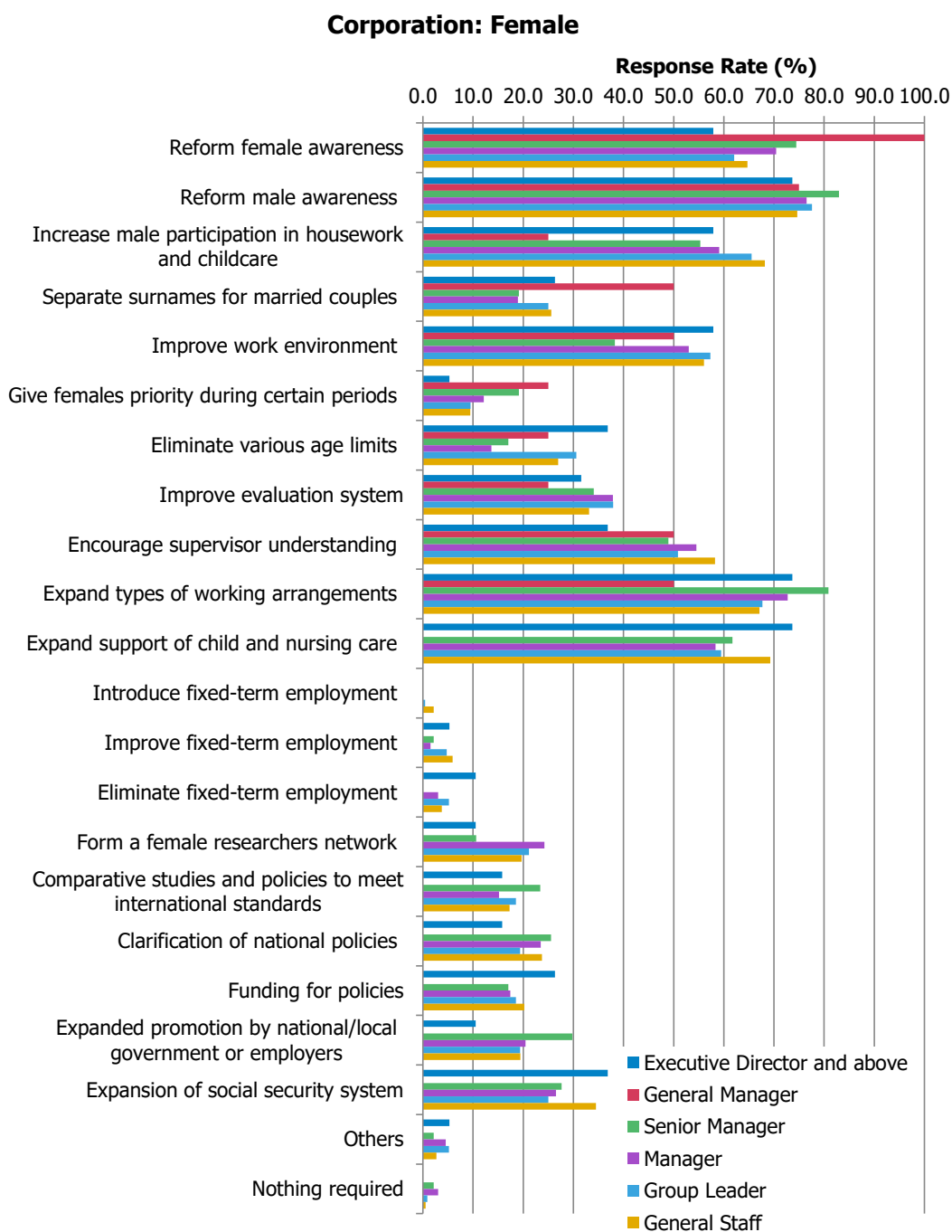


Figure 3.20 Requirements for Further Promoting Gender Equality (Multiple Answers)

Chapter 4 Important Issues: Limited-term Employment and Limited-term Researcher (Postdocs)

4.1 Basic Data for Limited-term Employment

Working Arrangement by Age (Figure 4.1), Working Arrangement by Affiliated Institution (Figure 4.2), Working Arrangement by Job Position (Figure 4.3)

For university/technical college and research institution, about 30% of the total is limited-term employment (Figure 4.2), and ratio of limited-term females is still higher than that of males for both institutions. Even by age, employment is mostly without term until retirement for corporation (Figure 4.1d), whereas in university/technical college and research institution, the ratio of limited-term is still higher than no-term at age 35 (Figure 4.1b). Especially for university/technical college, limited-term exceeds 40% for females even at age 40 and remains high compared with other institutions until age 50.

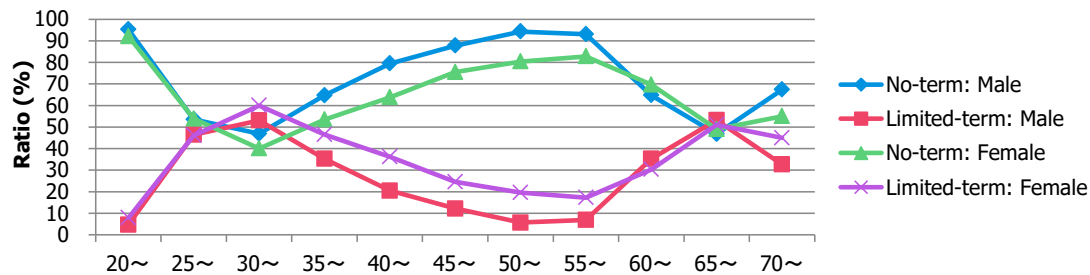


Figure 4.1a Working Arrangement by Age: Overall (Single Answer)

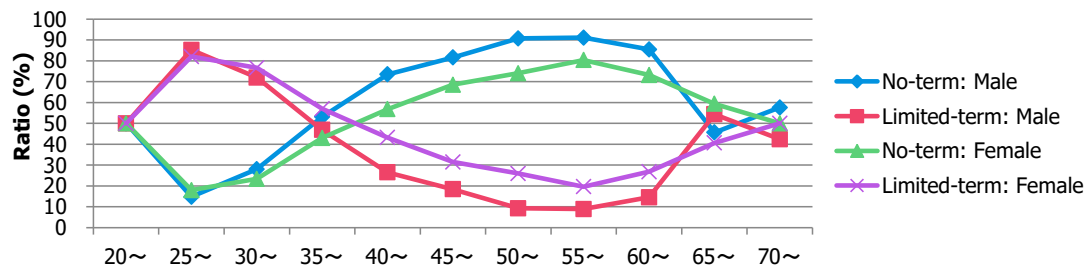


Figure 4.1b Working Arrangement by Age: University/Technical College (Single Answer)

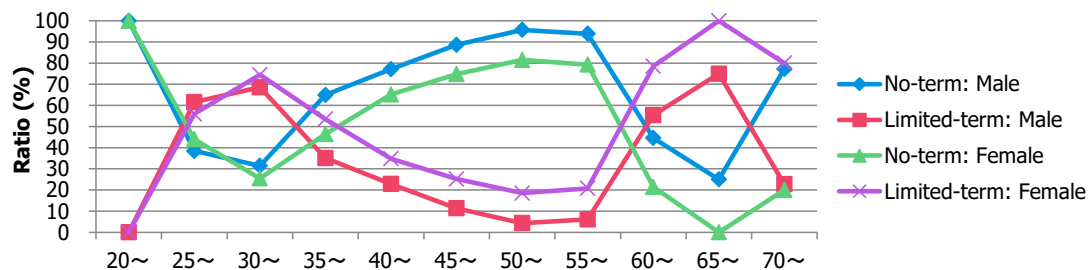


Figure 4.1c Working Arrangement by Age: Research Institution (Single Answer)

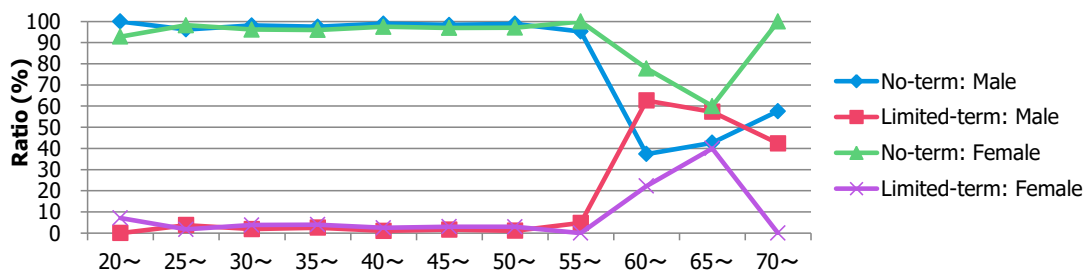


Figure 4.1d Working Arrangement by Age: Corporation (Single Answer)

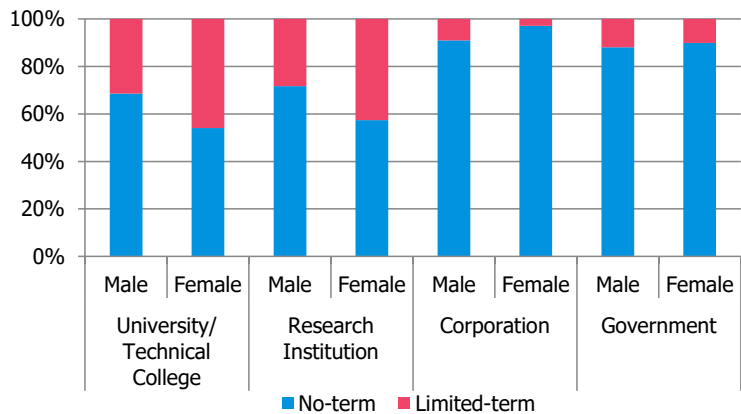


Figure 4.2 Working Arrangement by Institution (Single Answer)

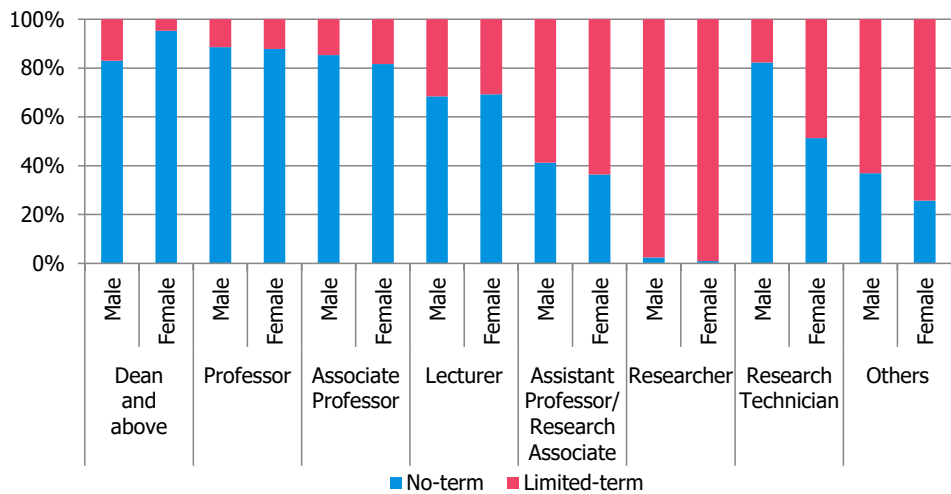


Figure 4.3a Working Arrangement by Job Position: University/Technical College (Single Answer)

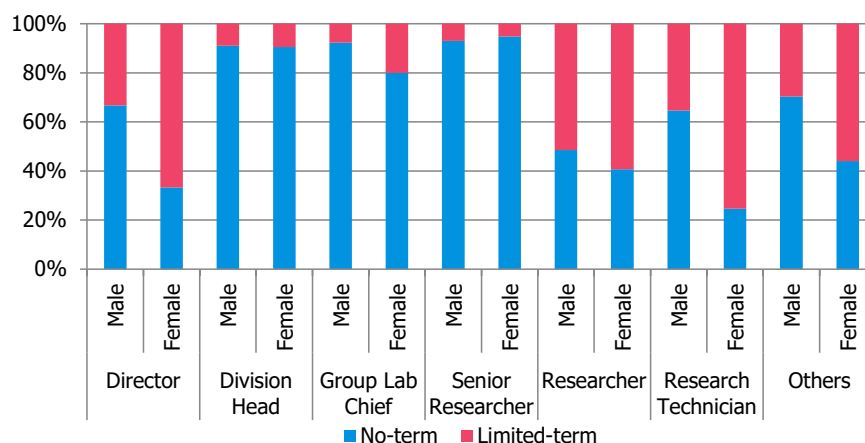


Figure 4.3b Working Arrangement by Job Position: Research Institution (Single Answer)

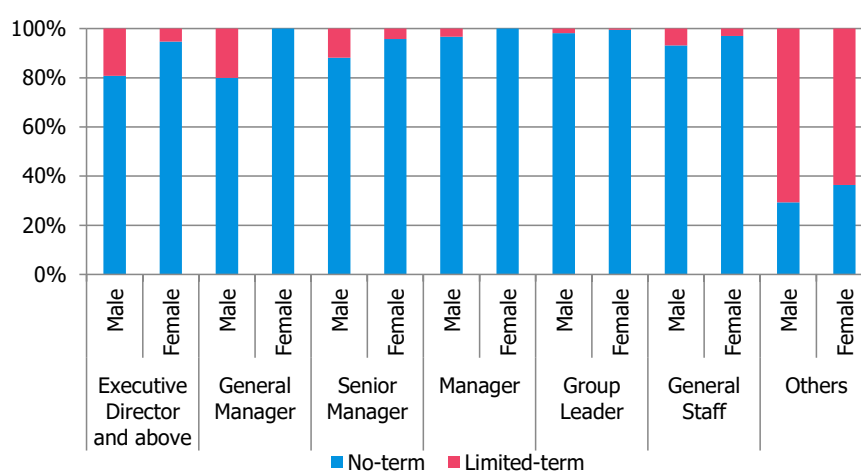


Figure 4.3c Working Arrangement by Job Position: Corporation (Single Answer)

Term of Employment by Occupational Field and Average Term of Employment by Gender, (Figure 4.4), Probability of Extending Limited-term Employment (Figure 4.5)

As for both genders, the terms of employment tend to be shorter for the lower job positions. This tendency was already seen in the third survey but, in the fourth survey, PIs who have a term of five years or longer have decreased clearly (Figure 4.4a). Furthermore, the chance of extending the term has also become lower than before (Figure 4.5).

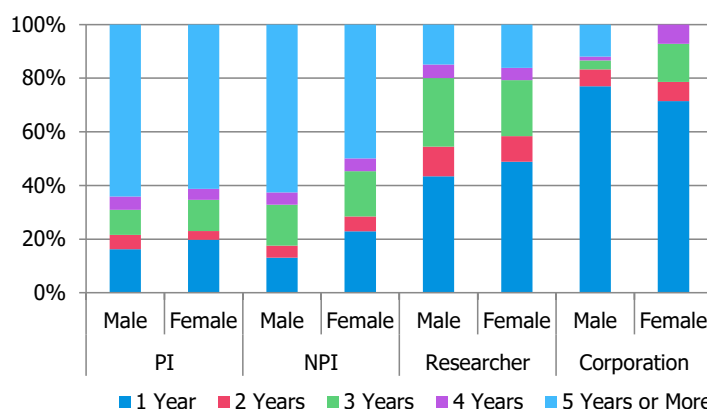


Figure 4.4a Term of Employment by Occupational Field (Single Answer)

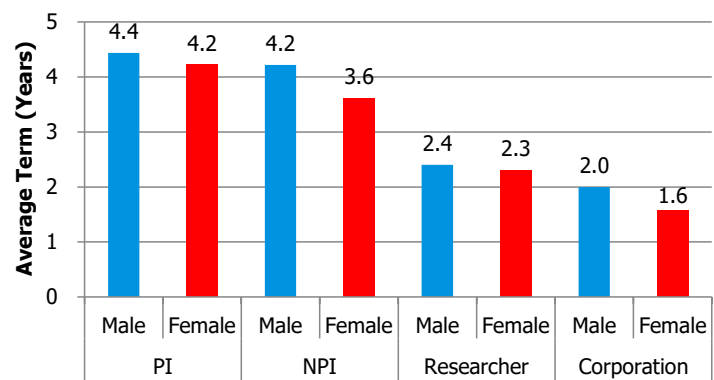


Figure 4.4b Average Term of Employment by Gender (Single Answer)

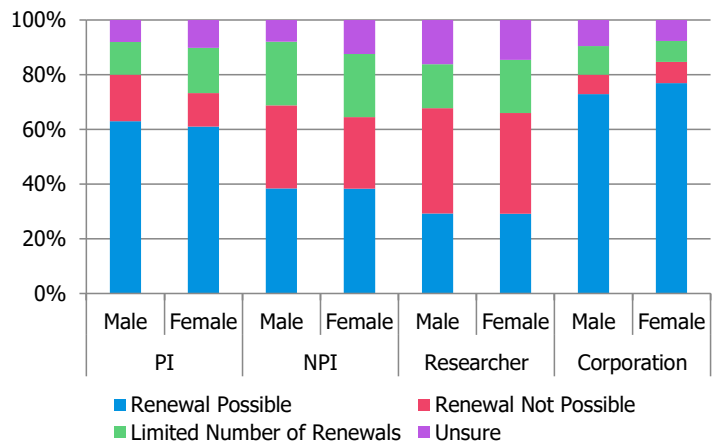


Figure 4.5 Probability of Extending Limited-term Employment (Single Answer)

Employment Arrangement and Average Annual Salary (Figure 4.6), Health and Pension Plans for Limited-term Employment (Figures 4.7-8)

Regardless of gender, annual salaries of limited-term employees are lower than that of no-term employees for all occupational fields. Females have lower annual salaries than males regardless of occupational field or employment arrangement. As for health and pension plans, participation ratio of female researchers whose contract time is less than 30 hours is very low at 50%.

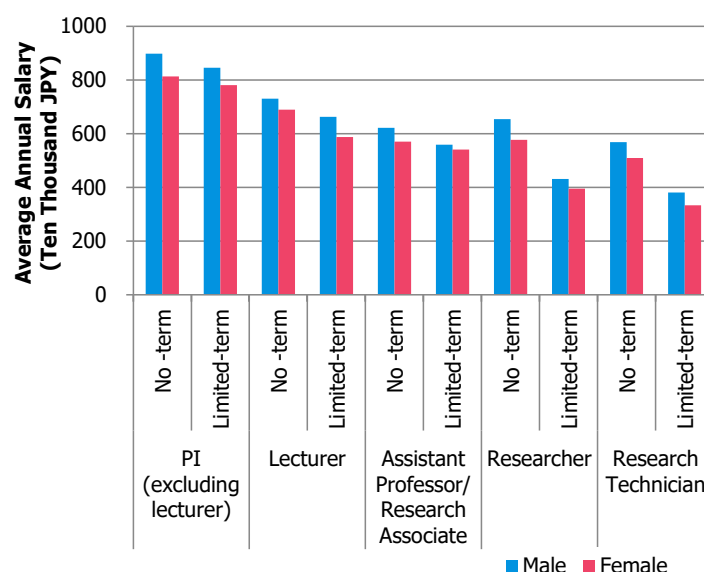


Figure 4.6 Employment Arrangement and Average Annual Salary (University/technical College and Research Institution) by Occupational Field/Gender (only those spending more than 40 hours per week at the workplace)

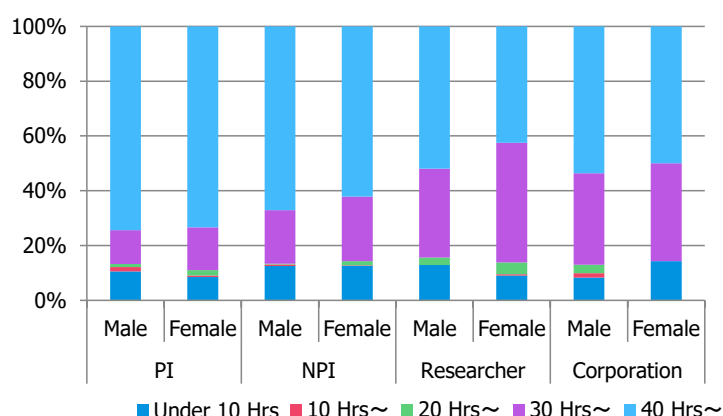


Figure 4.7a Health Plan Participation: Participants (Single Answer)

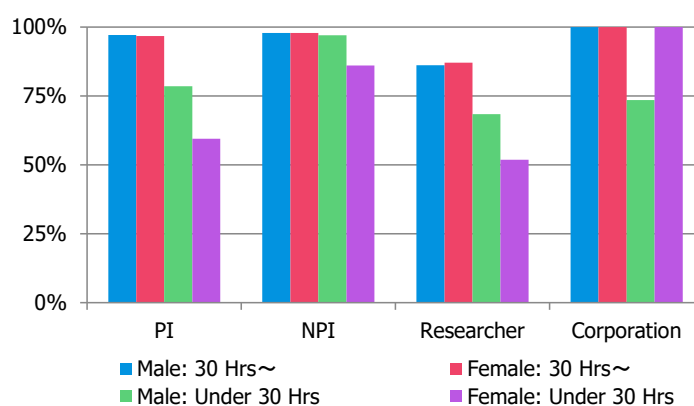


Figure 4.7b Health Plan Participation Ratio: Participants (Single Answer)

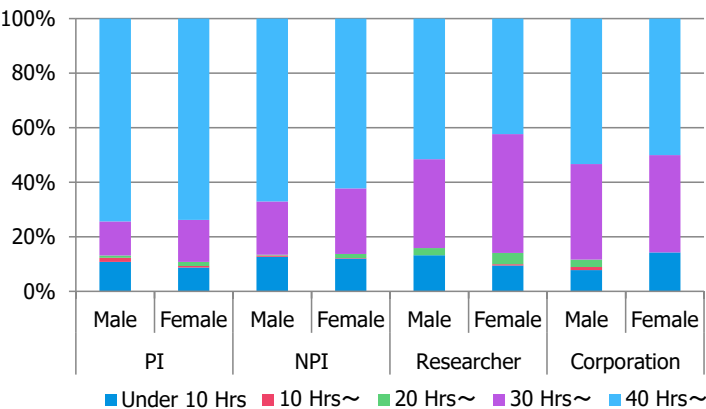


Figure 4.8a Welfare/Mutual Pension Plan Participation: Participants (Single Answer)

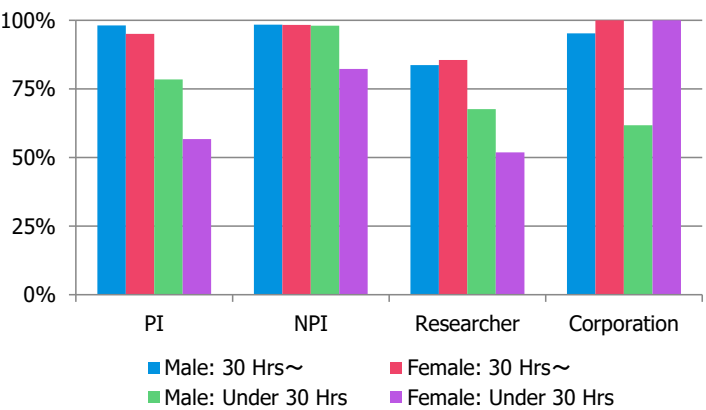


Figure 4.8b Welfare/Mutual Pension Plan Participation: Participation Ratio (Single Answer)

Limited-term Employment and Child Raising (Figure 4.9), Childcare Leave for Limited-term Employees (Figures 4.10-11)

Focusing on the 35 to 39 year age group considered as the child raising generation, nearly 50% of females have children regardless of whether their employment is limited-term or not. However, the ratio is lower for limited-term female researchers compared against other occupational fields. In many of the occupational fields, nearly 60% of males have children, but the ratio is less than 40% for limited-term male researchers, and the number of children they have is also very low. The ratio of those that take childcare leave decreases for both genders as job position becomes lower. Furthermore, the ratio of females that take leave is higher than males for all job positions, and females have a higher awareness of childcare leave programs than males.

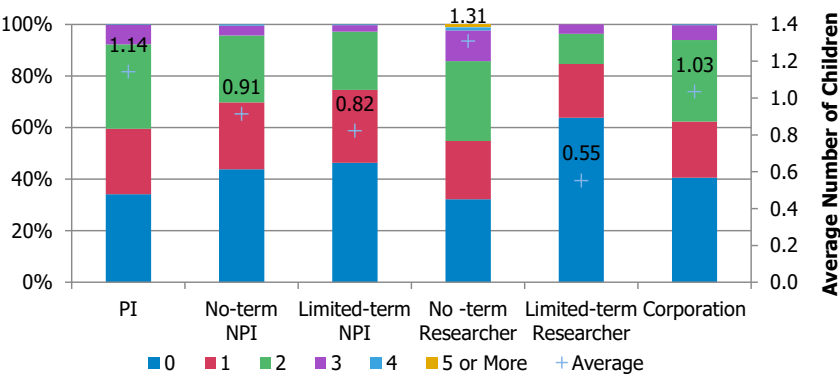


Figure 4.9a Number of Children by Gender/Job Position (for males ages 35 to 39 only) (Single Answer)

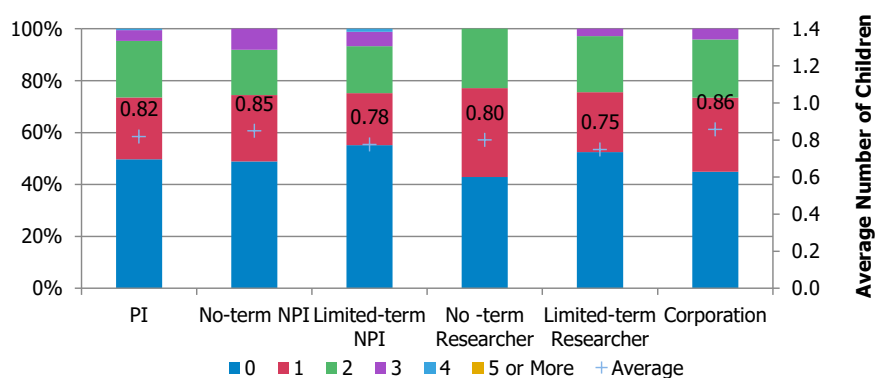


Figure 4.9b Number of Children by Gender/Job Position (for females ages 35 to 39 only) (Single Answer)

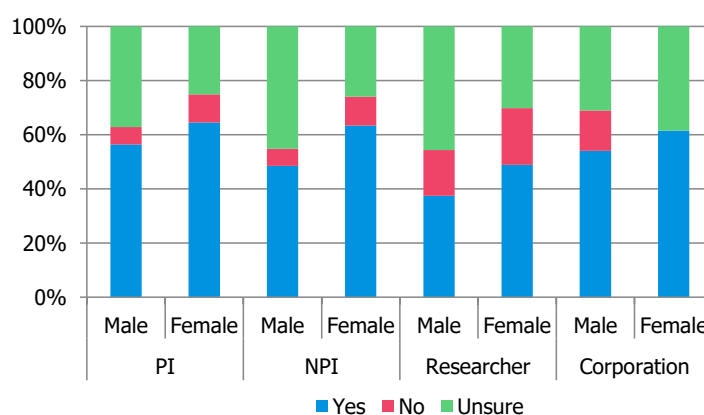


Figure 4.10 Childcare Leave for Limited-term Employment (Single Answer)

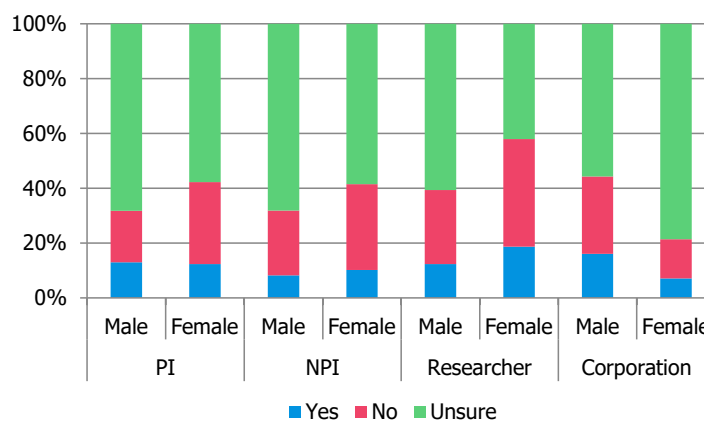


Figure 4.11 Term Extension Due to Childcare Leave for Limited-term Employment (Single Answer)

4.2 Aging of Limited-term Employment

Elapsed Years after Degree Acquisition and Employment Arrangement (Figure 4.12), Total Years of Limited-term Employment by Age/Gender (Figure 4.13)

A shift to the upper job position (no-term PI) can be observed with the passage of time after acquiring a degree (Figure 4.12). On the other hand, about half of those that acquired a degree six to ten years ago and 30% of those that acquired a degree 11 to 15 years ago are still under limited-term employment. The difference between genders is small immediately after acquiring a degree, but the difference widens over time. Ratio of female under no-term employment is low, and the ratio of limited-term researchers/NPI is high. Additionally, number of years spent under limited-term employment is longer for females.

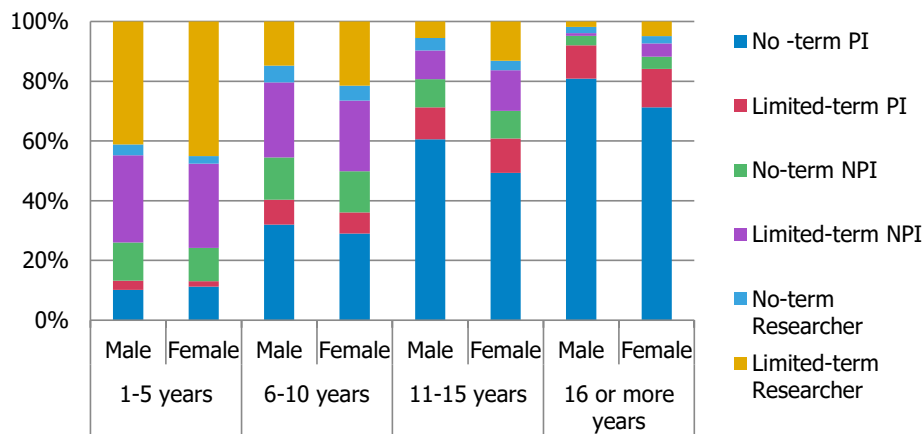


Figure 4.12 Employment Arrangement by Elapsed Years after Degree Acquisition for University/Technical College and Research Institution (Single Answer)

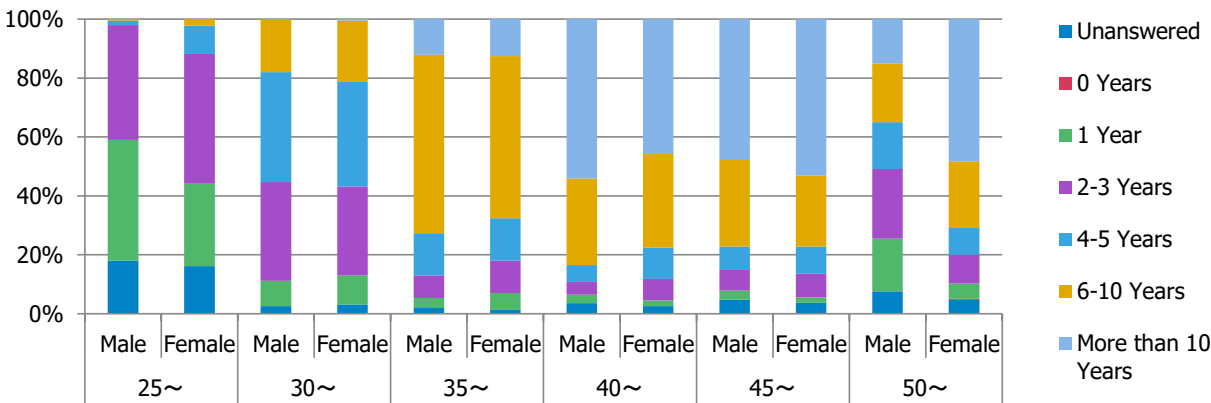


Figure 4.13 Total Years of Limited-term Employment x Age/Gender (Single Answer)

Job Position of Limited-term Employee and Desire for No-term Employment (Figure 4.14)

For university and research institution, the ratios of respondents that do not want to be a no-term employee was less than 7% for all job positions other than PI, whereas for PI the ratio increases, especially with females, the ratio is about 30%.

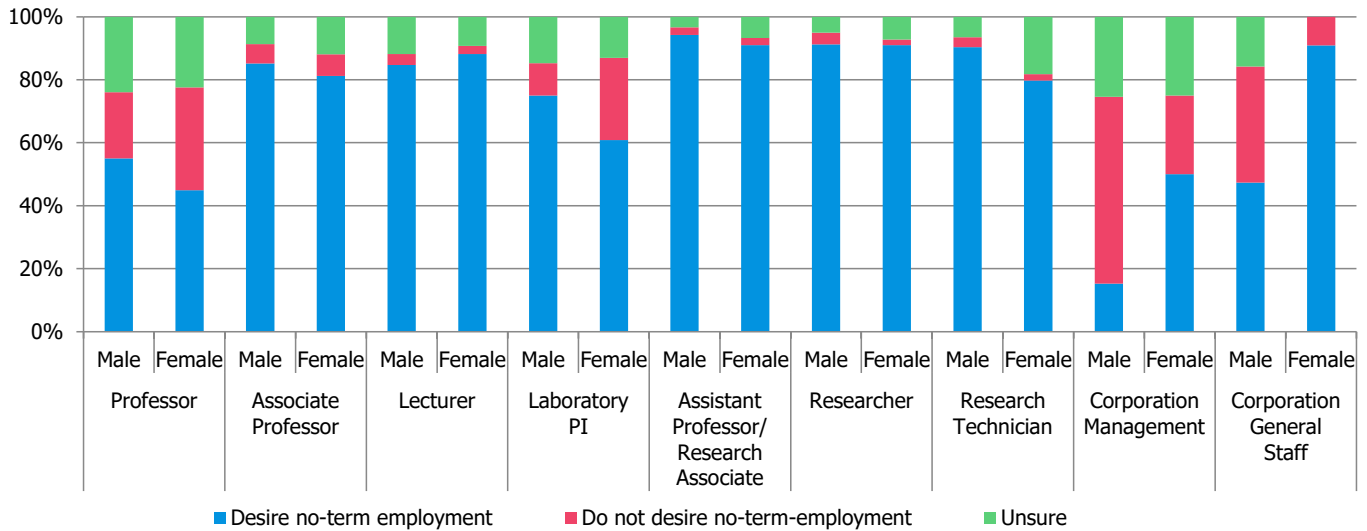


Figure 4.14 Desire for No-term Employment x Current Job (Single Answer)

4.3 Employment Status of Limited-term Researcher/NPI

Male-Female Ratio of Limited-term Researchers (Figure 4.15)

The female ratio of limited-term researchers increases with age. Even at age 60 and over, ratio of 20% is maintained. Limited-term researchers between the ages of 40 to 65 have increased significantly compared with the previous survey. Limited-term employment is aging suggesting an increase in the number of limited-term researchers that have never experience no-term employment.

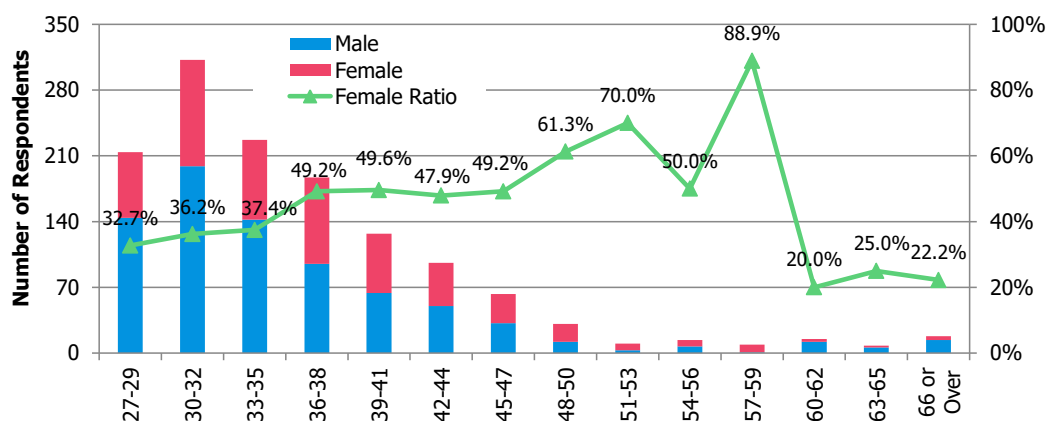


Figure 4.15a Limited-term Researchers by Age Group and Ratio of Females (Single Answer)

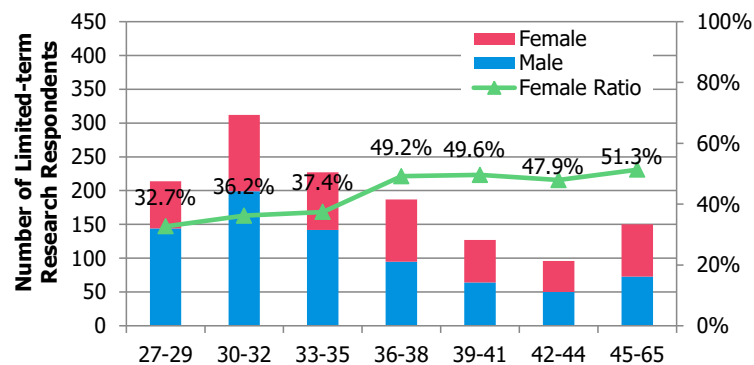


Figure 4.15b Limited-term Researchers by Age Group and Ratio of Females (Single Answer) (horizontal axis aligned with third survey)

Working Hours of Limited-term Researchers/NPI (Figures 4.16-19)

Hours spent at the workplace exceeds the contracted hours for nearly half of the limited-term researchers and NPI of both genders. Average hours spent at the workplace is longer for limited-term than no-term for both researchers and NPI. Although limited-term NPI spends longer hours at the workplace than limited-term researchers, the portion of their time spent on research is smaller. When limited-term researchers shift to limited-term NPI such as specially appointed assistant professor and specially appointed lecturer, the hours spent at the workplace increases due to work commitments other than research. Meanwhile, limited-term researchers have the highest proportion of research hours during the time they spend at their university and research institution workplaces.

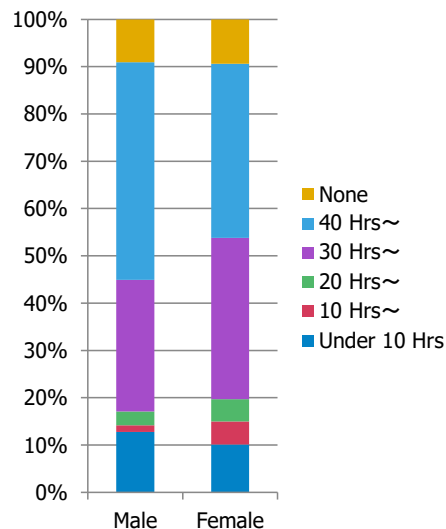


Figure 4.16 Contract Working Hours per Week of Limited-term Researcher (Single Answer)

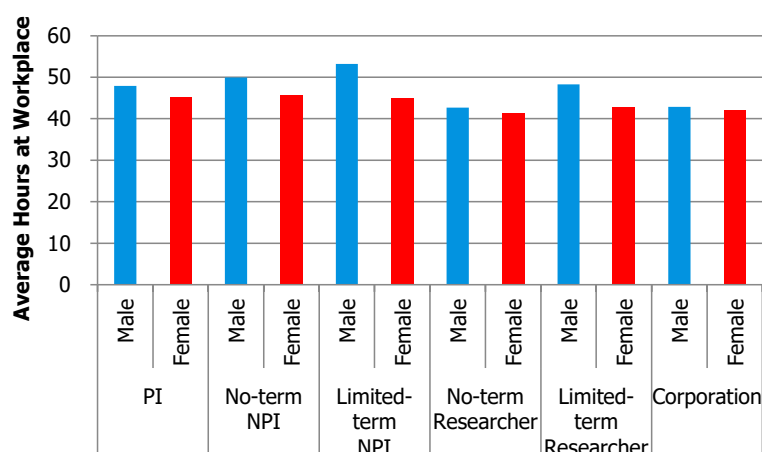


Figure 4.17 Weekly Hours Spent at Workplace by Occupational Field (Single Answer)

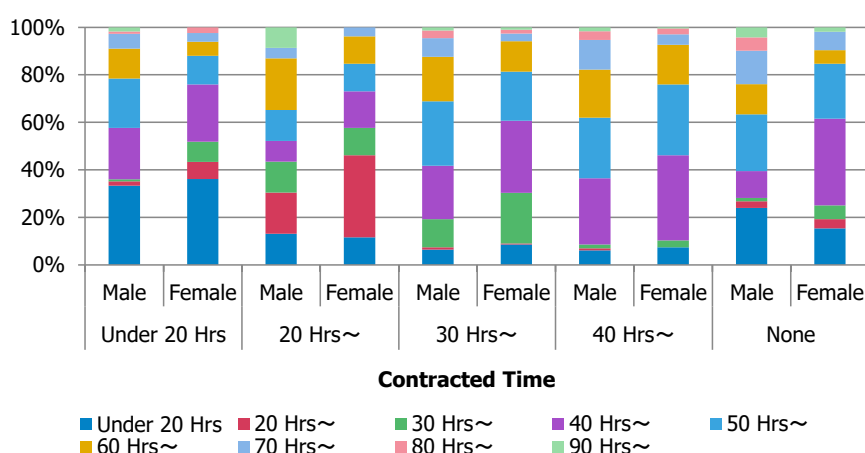


Figure 4.18a Contract Working Hours per Week of Limited-term Researcher and Hours Spent at Workplace (Single Answer)

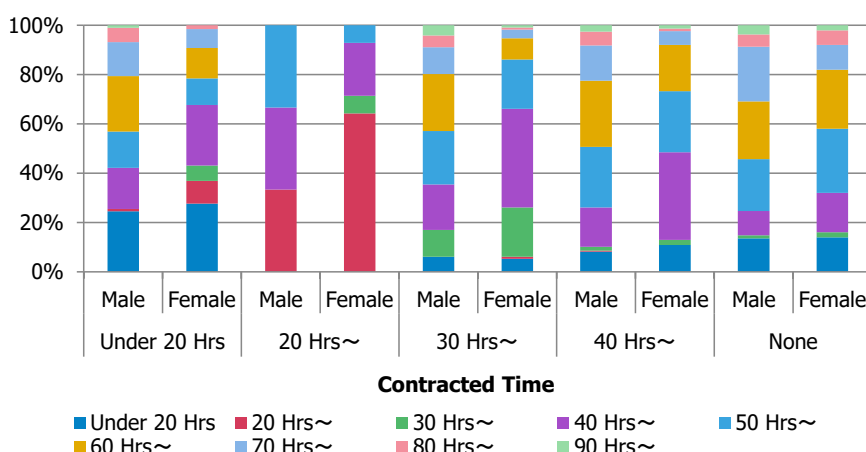


Figure 4.18b Contract Working Hours per Week of Limited-term NPI and Hours Spent at Workplace (Single Answer)

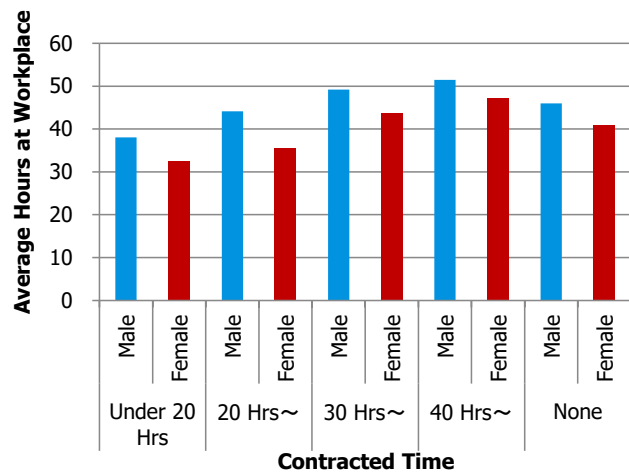


Figure 4.18c Average Hours Spent at Workplace/Contract Working Hours per Week of Limited-term Researcher (Single Answer)

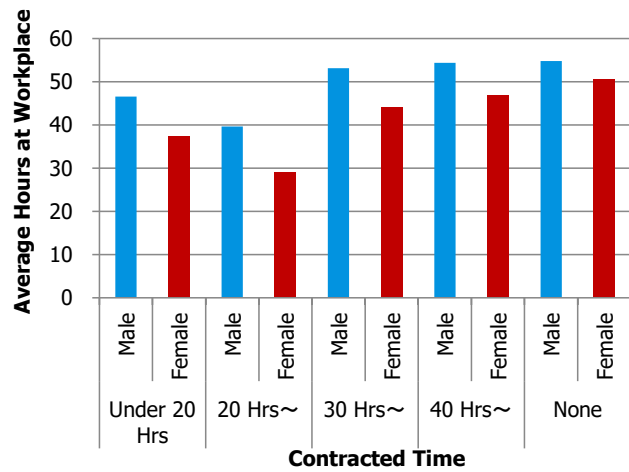


Figure 4.18d Average Hours Spent at Workplace/Contract Working Hours per Week of Limited-term NPI (Single Answer)

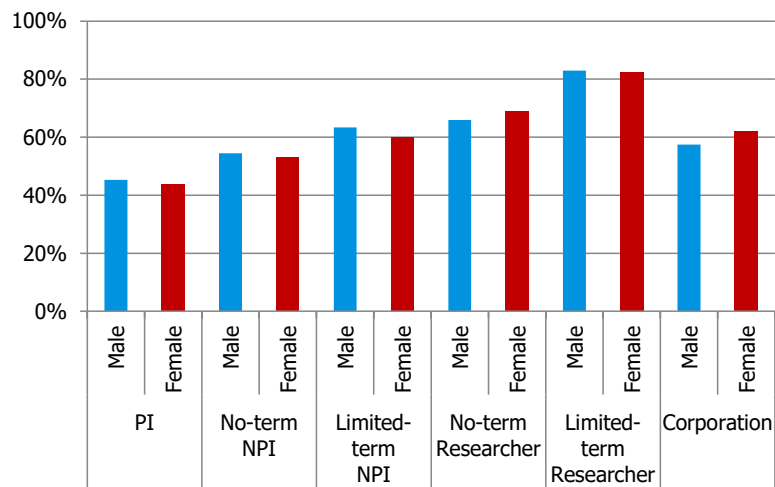


Figure 4.19 Average Hours Spent in Research While at Workplace (Single Answer)

Annual Salaries of Limited-term Researchers (Figures 4.20-21)

The annual salaries of limited-term researchers are lower for all ages and both genders when compared against the average annual salaries of corporations in general, and the gap widens as age increases (Figure 4.20b, c). Furthermore, there is almost no increase in the annual salaries of limited-term researchers with age (Figure 4.20a). Along with research technicians, the ratio of those earning less than 4 million JPY per year is higher than other occupational fields, and the female ratio for that is higher than males (Figure 4.21).

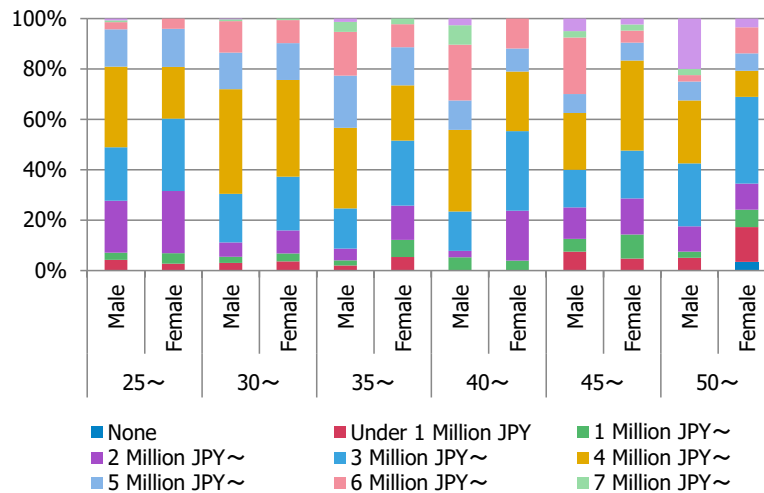


Figure 4.20a Annual Salary of Limited-term Researcher by Age and Gender (Single Answer)

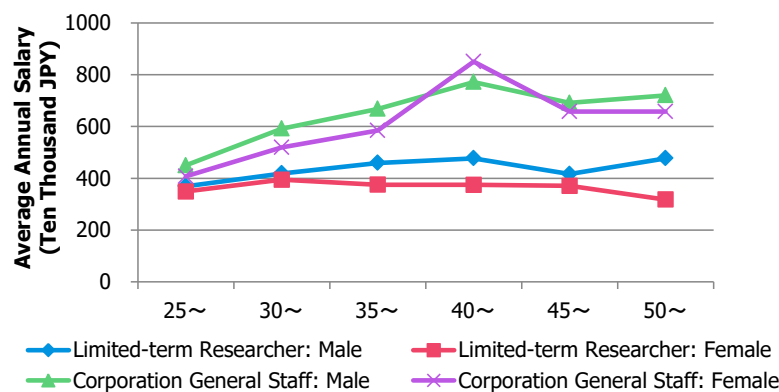


Figure 4.20b Average Annual Salary of Limited-term Researcher by Age and Gender (Single Answer)

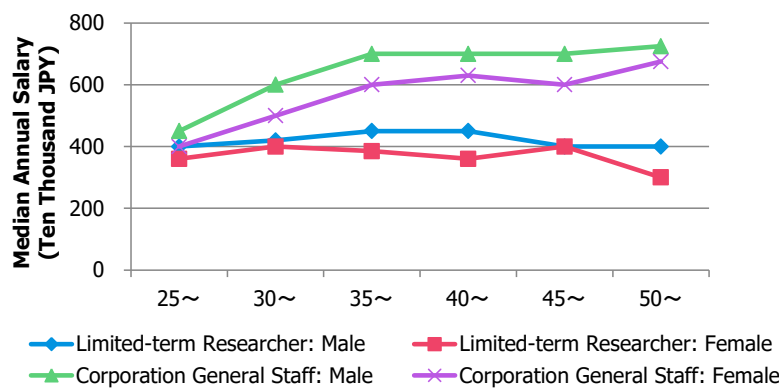


Figure 4.20c Median Annual Salary of Limited-term Researcher by Age and Gender (Single Answer)

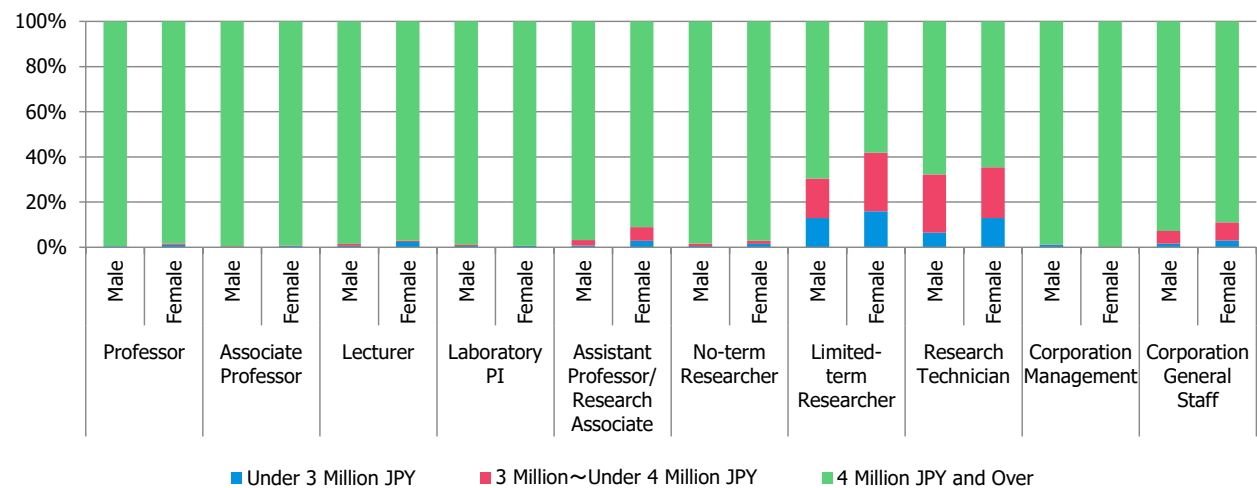


Figure 4.21 Annual Salary of Respondents with Doctoral Degree that Spend Over 40 Hours at Workplace (Single Answer)

4.4 Tenure Track

Ratio of Tenure Track Employment by Age (Figure 4.22), Elapsed Years after Degree Acquisition (Figure 4.23)

Ratio of respondents under tenure track employment is highest for those between the ages of 35 and 45 at 15-20% (Figure 4.22) and those who had their degree for six to ten years at about 20% (Figure 4.23). Moreover, females under tenure track employment is lower for many of the age groups.

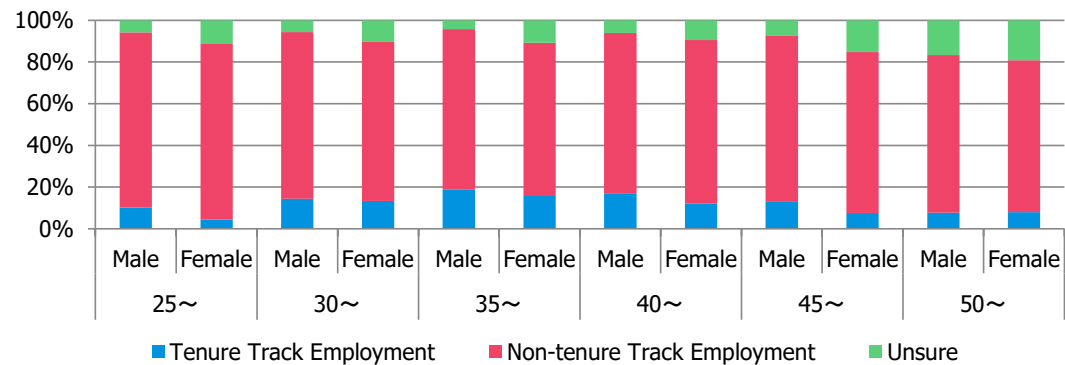


Figure 4.22 Tenure Track Employment x Age (Single Answer)

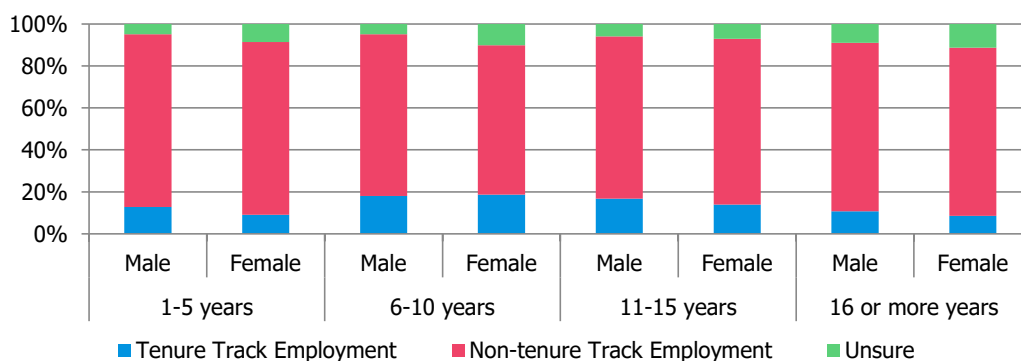


Figure 4.23 Tenure Track Employment x Elapsed Years after Degree Acquisition (Single Answer)

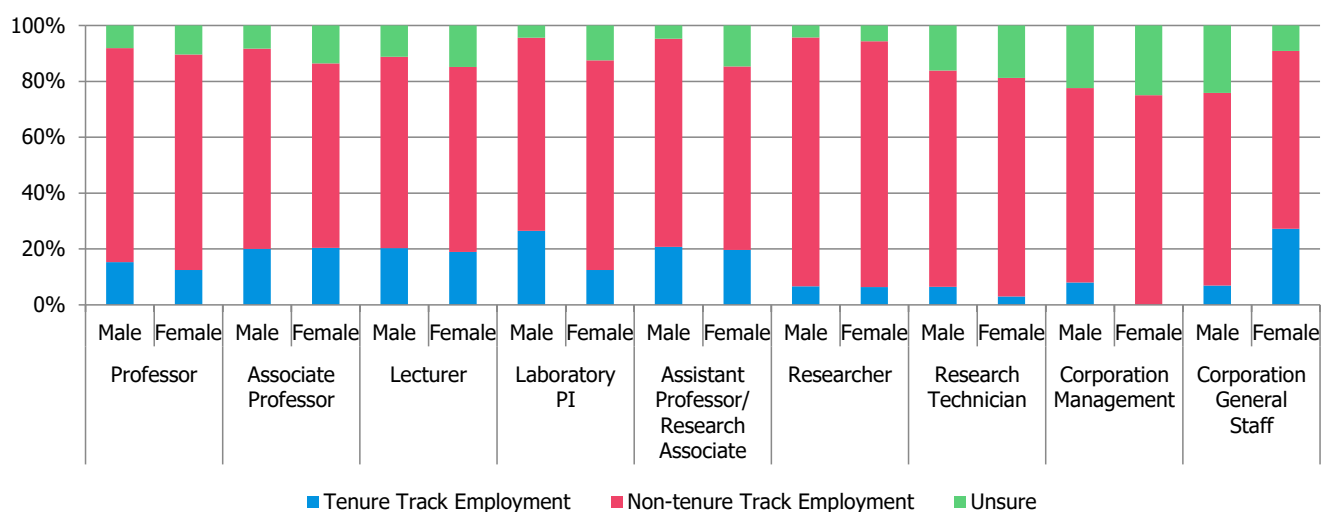


Figure 4.24 Tenure Track Employment x Current Job (Single Answer)

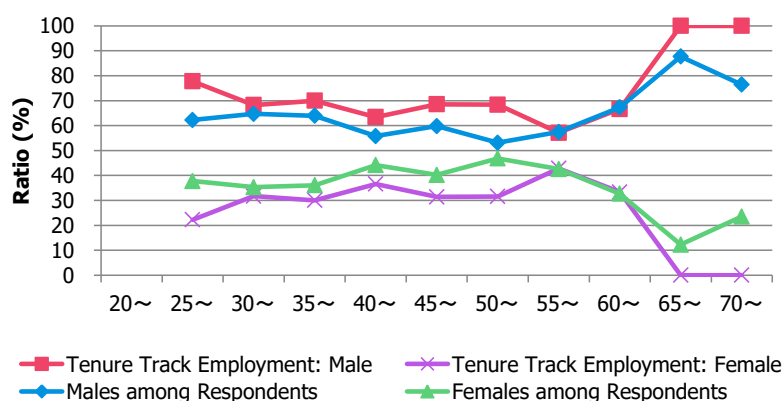


Figure 4.25 Working Arrangement by Age: University/Technical College (Single Answer)

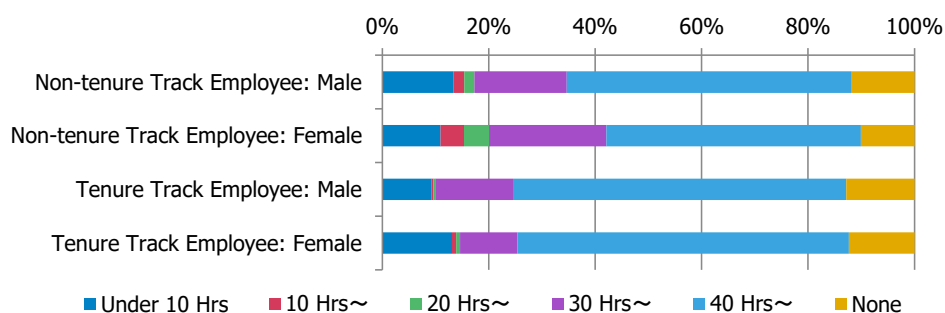


Figure 4.26 Contract Working Hours for Tenure and Non-tenure Employments (Single Answer)

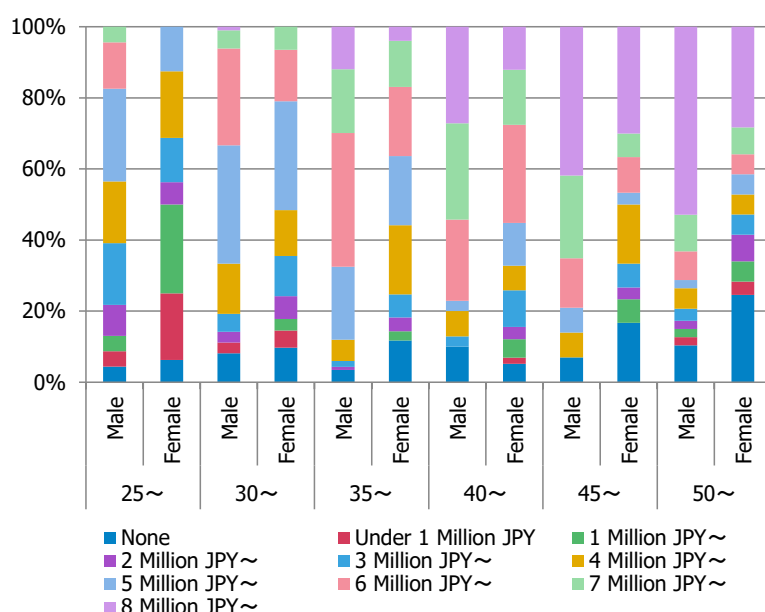


Figure 4.27a Annual Salary of Tenure Track Employee by Age and Gender (Single Answer)

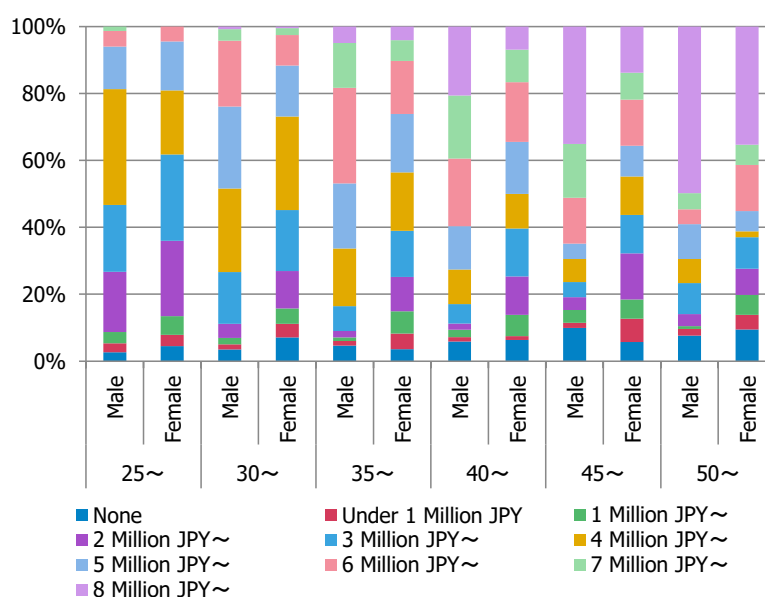


Figure 4.27b Annual Salary of Non-tenure Track Employee by Age and Gender (Single Answer)

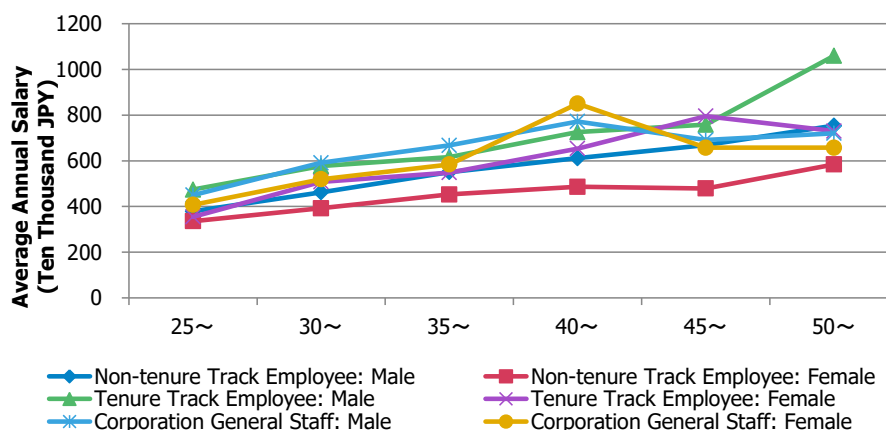


Figure 4.27c Annual Salary of Tenure and Non-tenure Employees by Age and Gender (Single Answer)

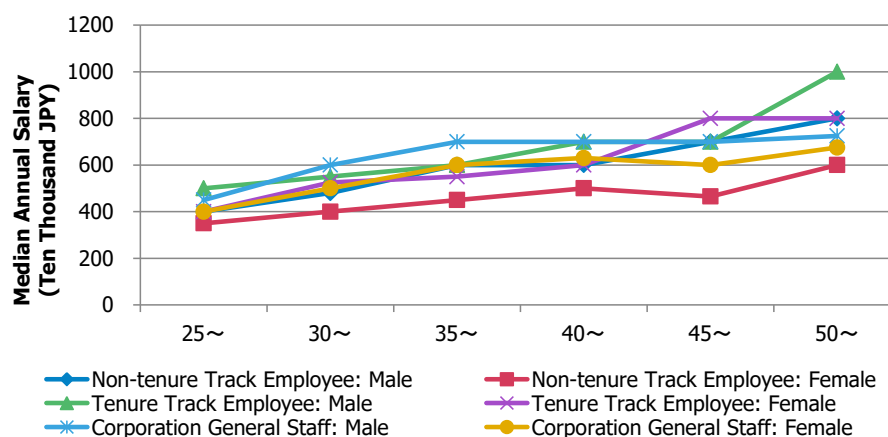


Figure 4.27d Annual Salary of Tenure and Non-tenure Employees by Age and Gender (Single Answer)

Childcare Leave and Employment Extension for Tenure Track Employees (Figure 4.28)

Childcare leave is approved for over 90% of tenure track employees, but in case of non-tenure track employees, the ratio is about 78% for males and 70% for females. Under tenure track employment, nearly 60% of both genders are approved for employment extension after taking childcare leave, whereas for non-tenure track employment, approval is low at about 20% for both genders.

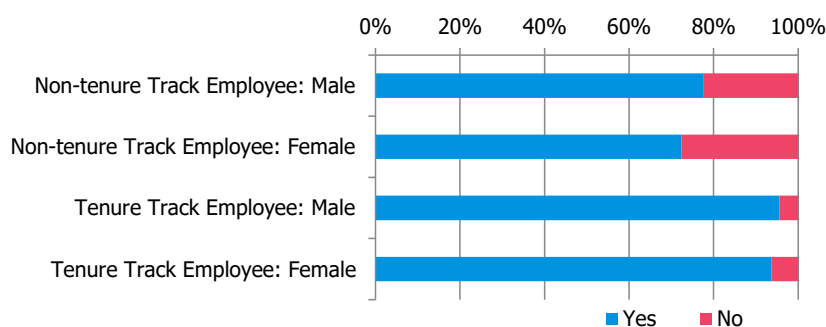


Figure 4.28a Childcare Leave for Tenure and Non-tenure Employees (Single Answer)

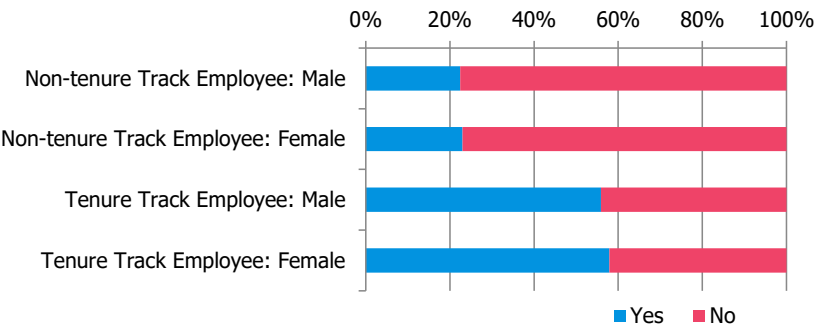


Figure 4.28b Employment Extension for Tenure and Non-tenure Employees after Childcare Leave (Single Answer)

Ratio of Time Spent on Research by Tenure Track Employees during Workplace Hours (Figure 4.29)

Compared with non-tenure track employees, ratio of tenure track employees under contract to work 40 or more hours per week is about 13 points higher. Annual salaries are about 10% higher for the tenure track employees, and as age goes up, the difference tends to widen. The annual salaries of females are lower than males at any age resulting in a particularly low annual salary for non-tenure track females. Although the annual salaries of tenure track males in their 50’s are noticeably high, there is a possibility they were hired under a newly adopted salary system. Furthermore, the ratio of time spent on research during workplace hours is lower for tenure track employees than non-tenure track for both genders. The gender difference in research time is small for non-tenure track employees, but for tenure track employees, the females have a lower ratio.

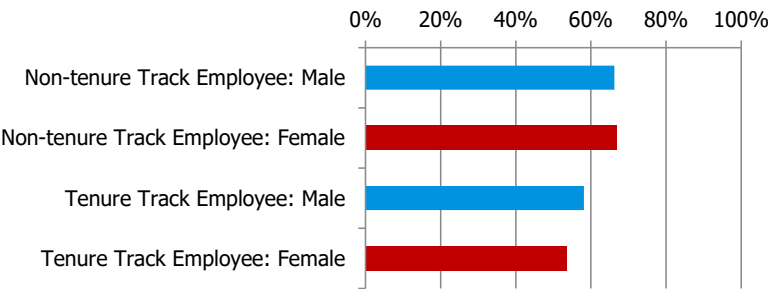


Figure 4.29 Average Time Spent on R&D at Workplace for Tenure and Non-tenure Employees (Single Answer)

Chapter 5 Important Issues: Program and Policy Awareness

5.1 Familiarity with Recent Laws and Policies

Respondents were inquired as to their familiarity with the following recently enacted programs, policies and formulated basic plans.

- The Act on Promotion of Women's Participation and Advancement in the Workplace (Effective April 1, 2016)
- 5th Science and Technology Basic Plan (Approved January 2016)
- Fourth Basic Plan for Gender Equality (Approved December 2015)
- Excellent Young Researchers Program (March 2016)

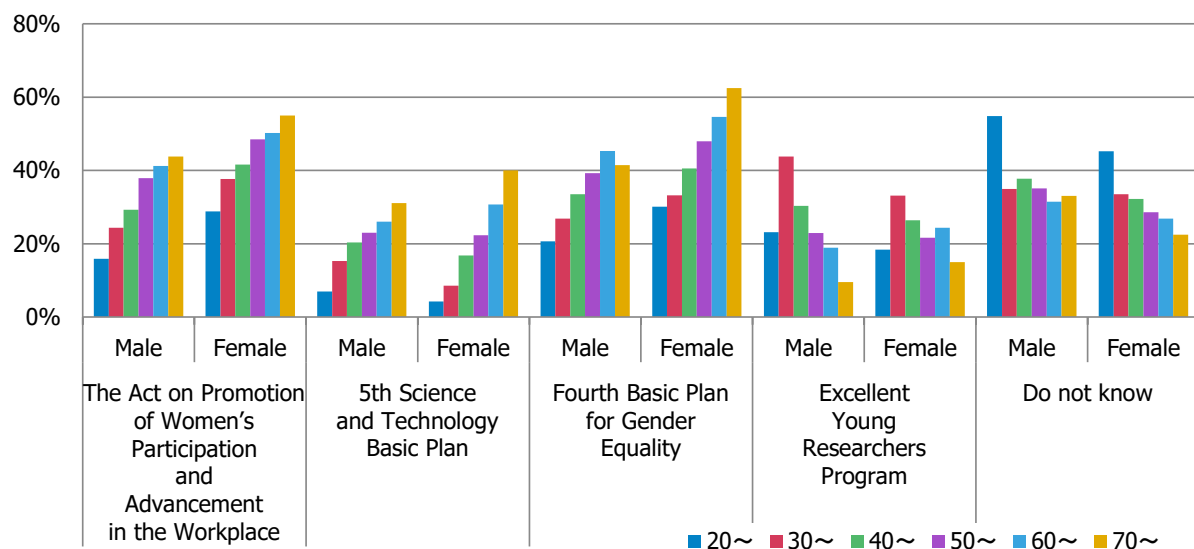


Figure 5.1 Awareness of Recent Laws/Policies by Age Group and Gender (Single Answer per Item)

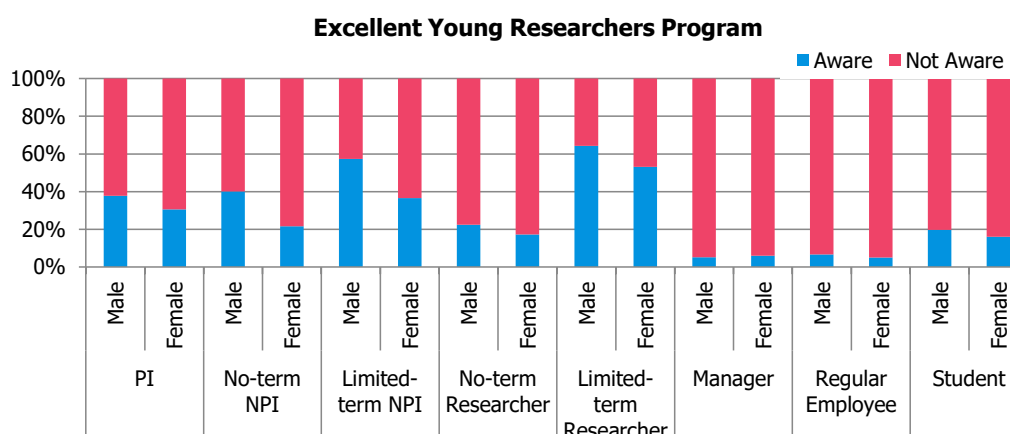
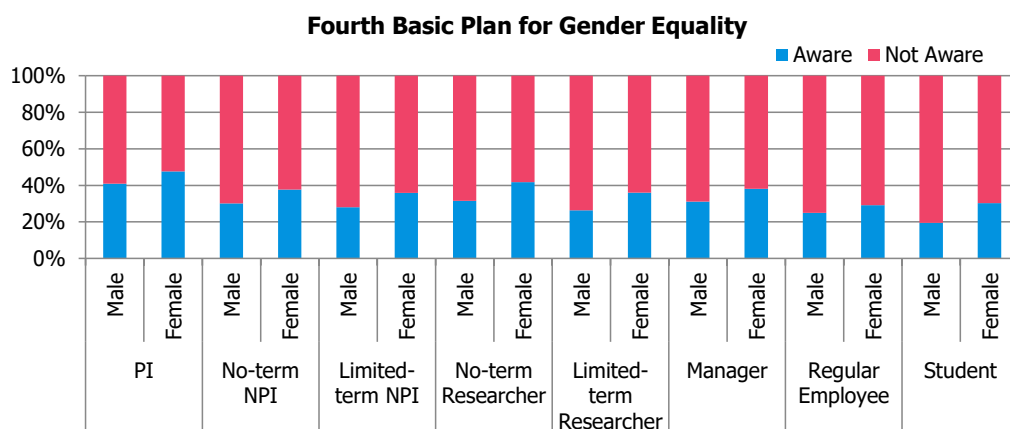
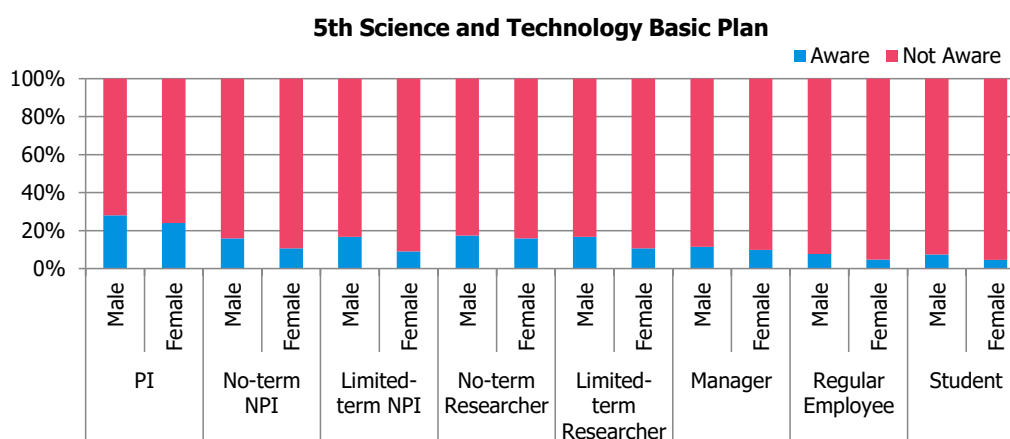
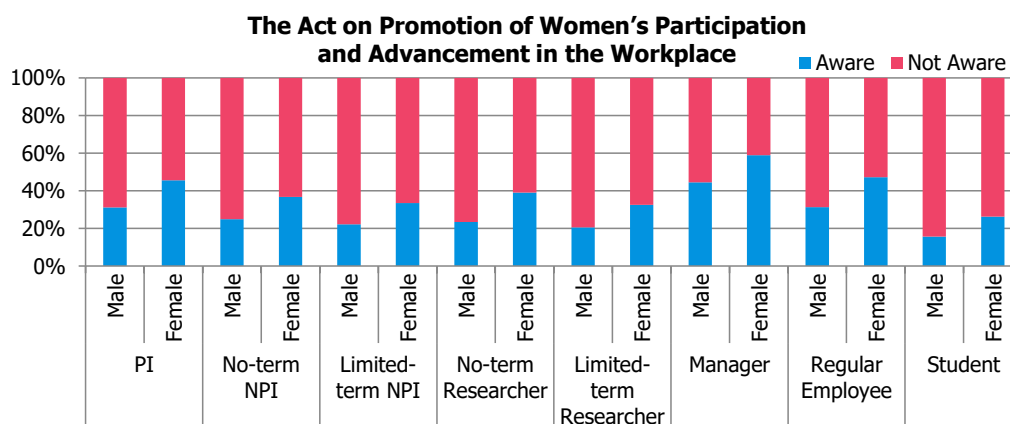


Figure 5.2 Awareness of Recent Laws/Policies by Occupational Field (Single Answer)

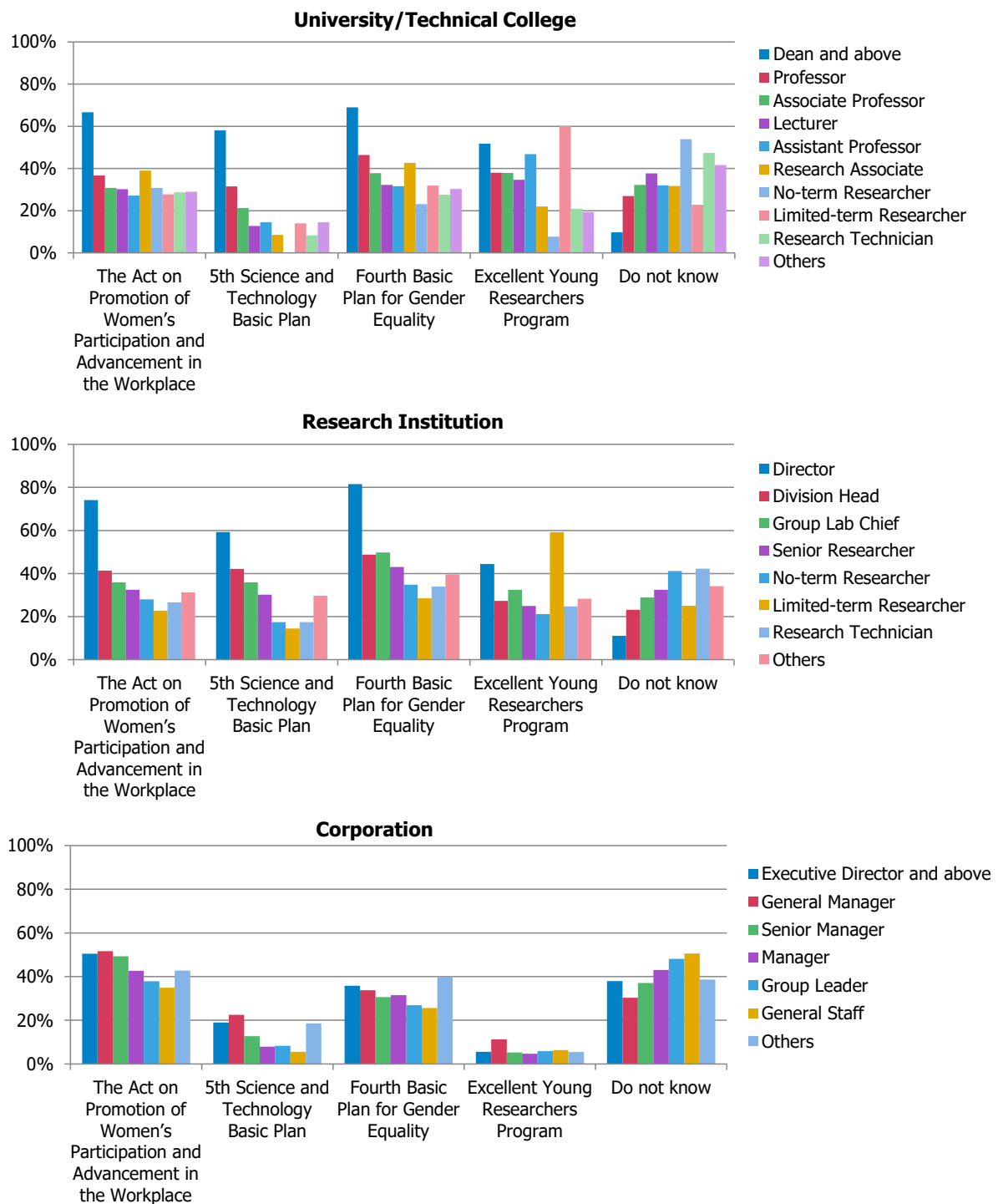


Figure 5.3 Awareness of Recent Laws/Policies by Job Position (Single Answer per Item)

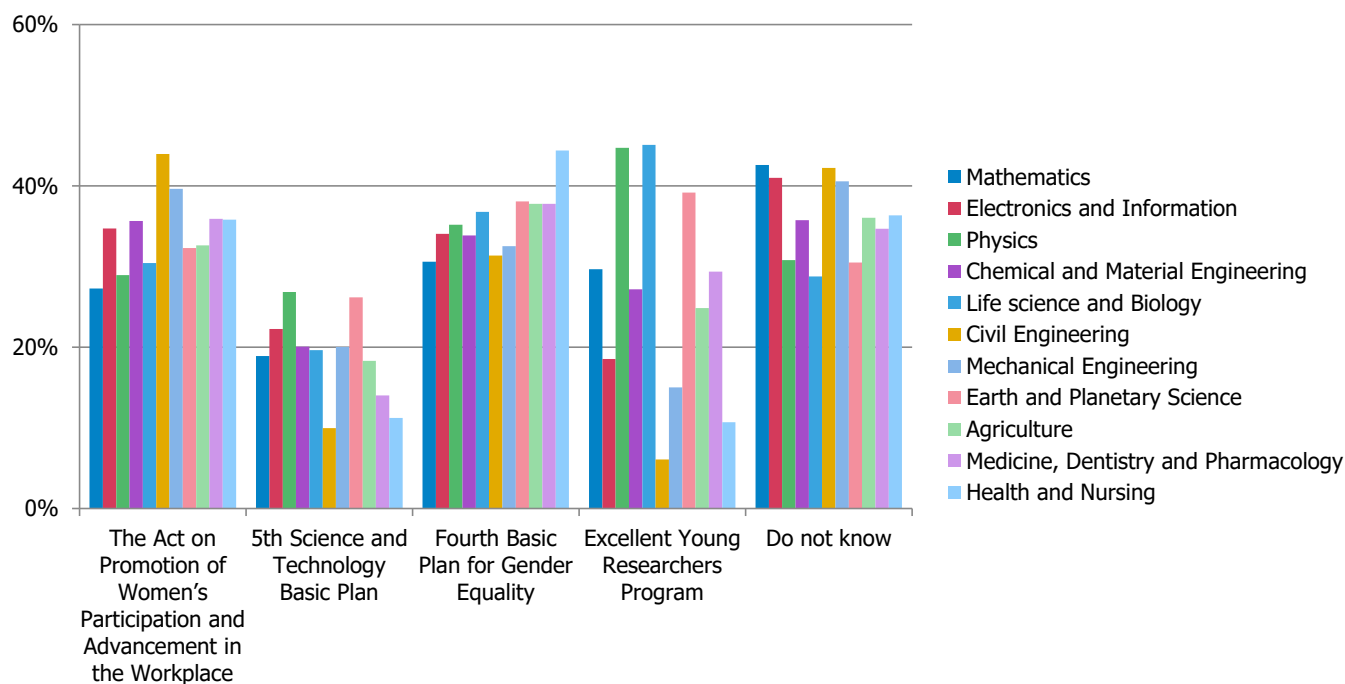


Figure 5.4 Awareness of Recent Laws/Policies Overall by Profession (Single Answer per Item) (excludes students)

5.2 Support Programs Currently Underway for Female Researchers

Respondents were inquired as to whether they are familiar with the following six support programs currently underway for female researchers and if they are meaningful.

- ① Restart Support after Childbirth/Childcare: Project of the Japan Society for the Promotion of Science to support “special researchers-RPD” and outstanding young researchers to smoothly return to the research arena after childbirth/childcare.
- ② Science Course Selection Support for Middle and High School Females: Project of the Japan Science and Technology Agency (JST) aimed at supporting middle and high school females select science career paths.
- ③ Initiative for Realizing Diversity in the Research Environment (Formerly Supporting Activities for Female Researchers): Project of the Ministry of Education, Culture, Sports, Science and Technology - Japan aimed at supporting environmental improvement so that female researchers can balance life events and research.
- ④ Childbirth and Childcare Consideration in Scientific Research Grants: i) Program enabling researchers with scientific research grants to resume research interrupted due to maternity/childcare leave. ii) Research subjects set up for researchers who are unable to apply for grants during the application period due to maternity/childcare leave. iii) Application age limit for research subjects relaxed taking into consideration maternity/childcare leave (from the previous 37 years old or under to 39 years old or under). These programs are also applicable to males who take childcare leave. The above is the work of the Japan Society for the Promotion of Science.
- ⑤ Strategic Basic Research Programs’ measures for considering childbirth and child-caring: Project of JST. It is “a program allowing researchers to interrupt and extend research at times of birth/childcare and supports the researchers’

comeback”.

⑥ Challenge Campaign (Riko-challe) - Science and Engineering Field Selection for Female Students: Project of the Gender Equality Bureau Cabinet Office to further accelerate the efforts for encouraging female high school students and others to select science and engineering career paths by providing information such as introduction of female researchers/engineers from various science and engineering fields.

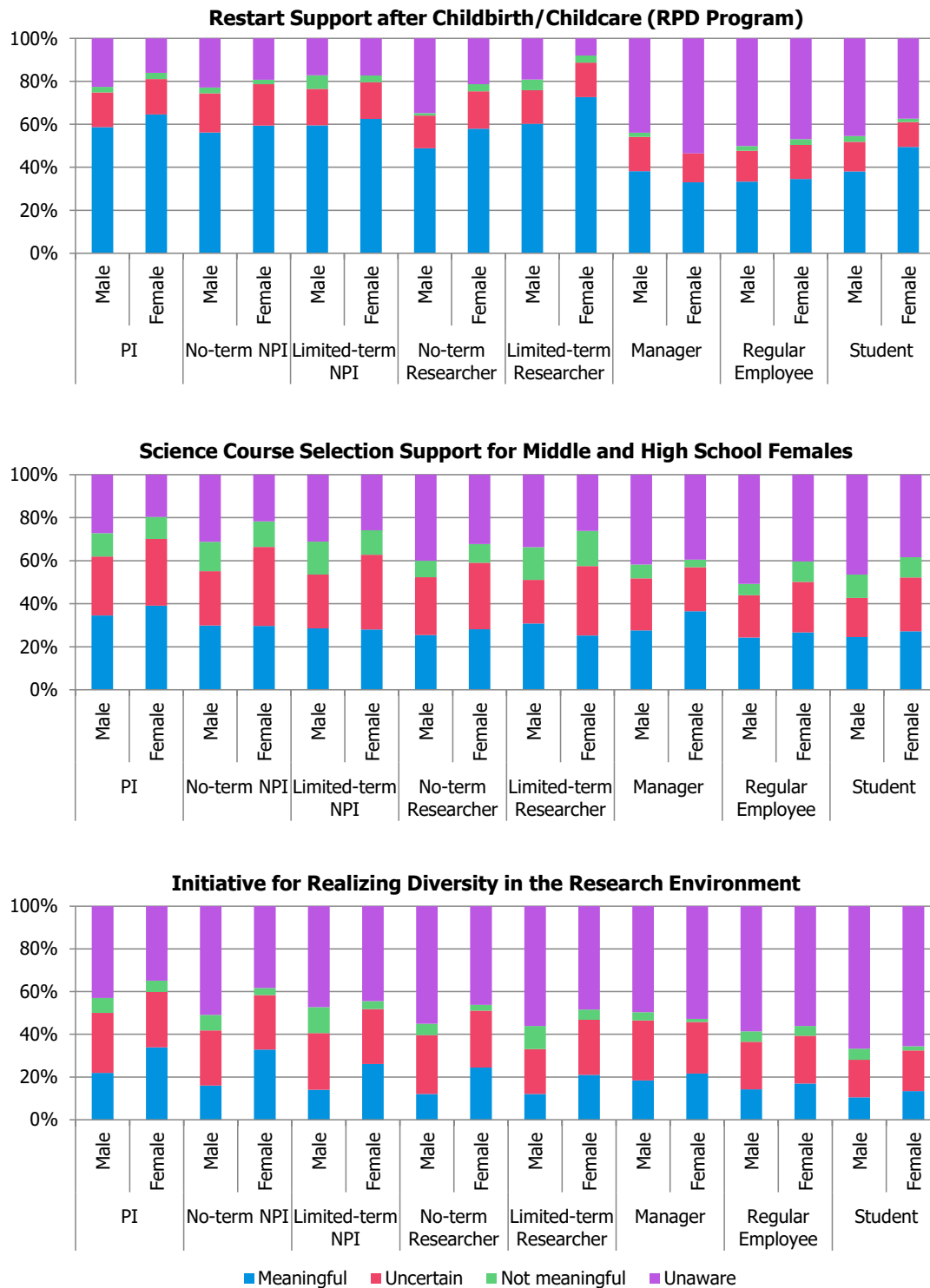




Figure 5.5 Perception of Recent Policies by Occupational Field (Single Answer)

5.3 Numerical Targets for Hiring Female Researchers

Numerical targets for hiring of new female researchers as stated in the 4th Science and Technology Basic Plan (30% in natural sciences overall, 20% in science, 15% in engineering, 30% agriculture, 30% in medicine, dentistry and pharmacology combined) were not achieved. The targets have been carried over to the 5th Science and Technology Basic Plan (approved by the Cabinet in January 2016). Investigating the awareness of numerical targets for hiring of female researchers, the ratio of “do not know” responses was up 1 point for males and about 2 points for females compared with the previous survey. If the combined ratio of “well aware” and “somewhat aware” responses is considered as the degree of awareness, for university/technical college and research institution, awareness tends to rise as job position rises regardless of gender (Figure 5.6).

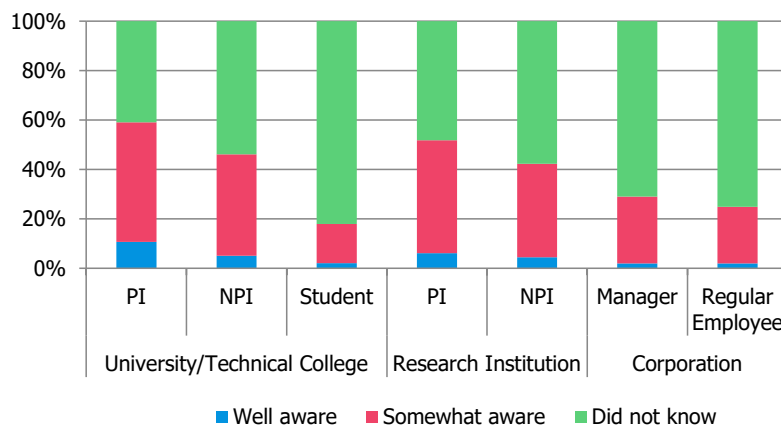


Figure 5.6 Awareness of Numerical Target for Newly Hired Female Researchers by Occupational Field (Single Answer)

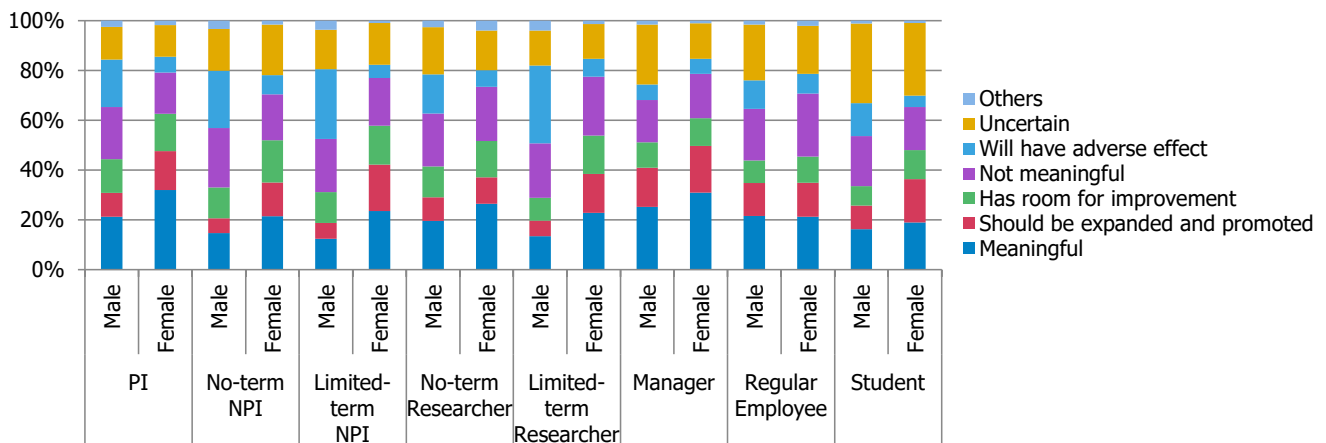


Figure 5.7 Perception of Numerical Target for Newly Hired Female Researchers by Occupational Field (Single Answer)

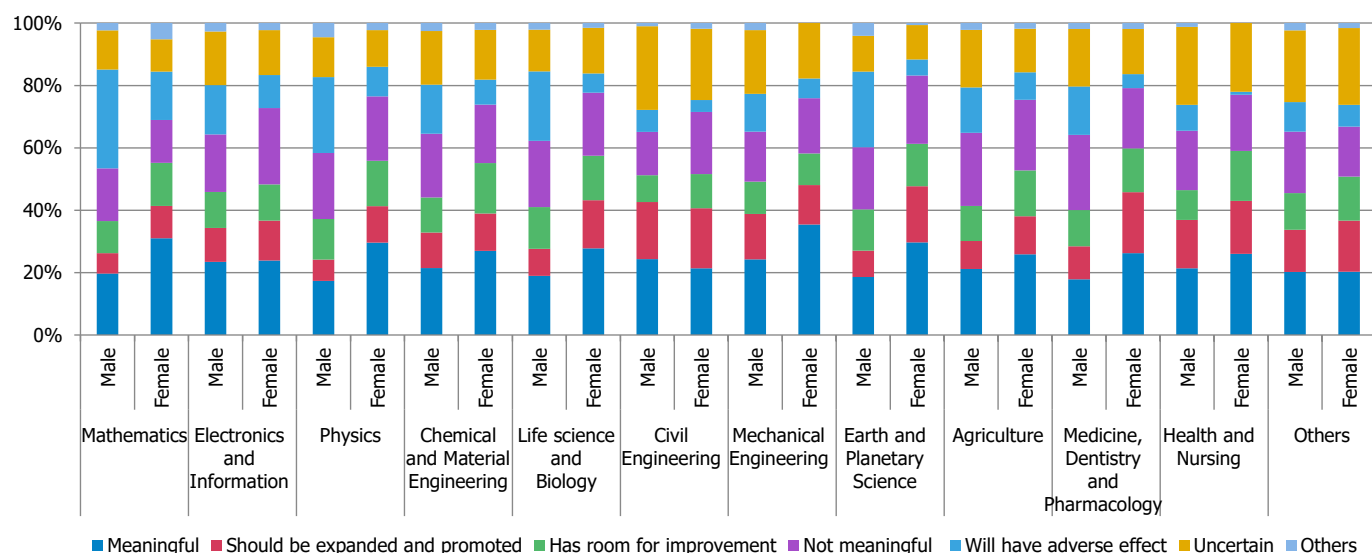


Figure 5.8 Perception of Numerical Target for Newly Hired Female Researchers by Profession (Single Answer) (excludes students)

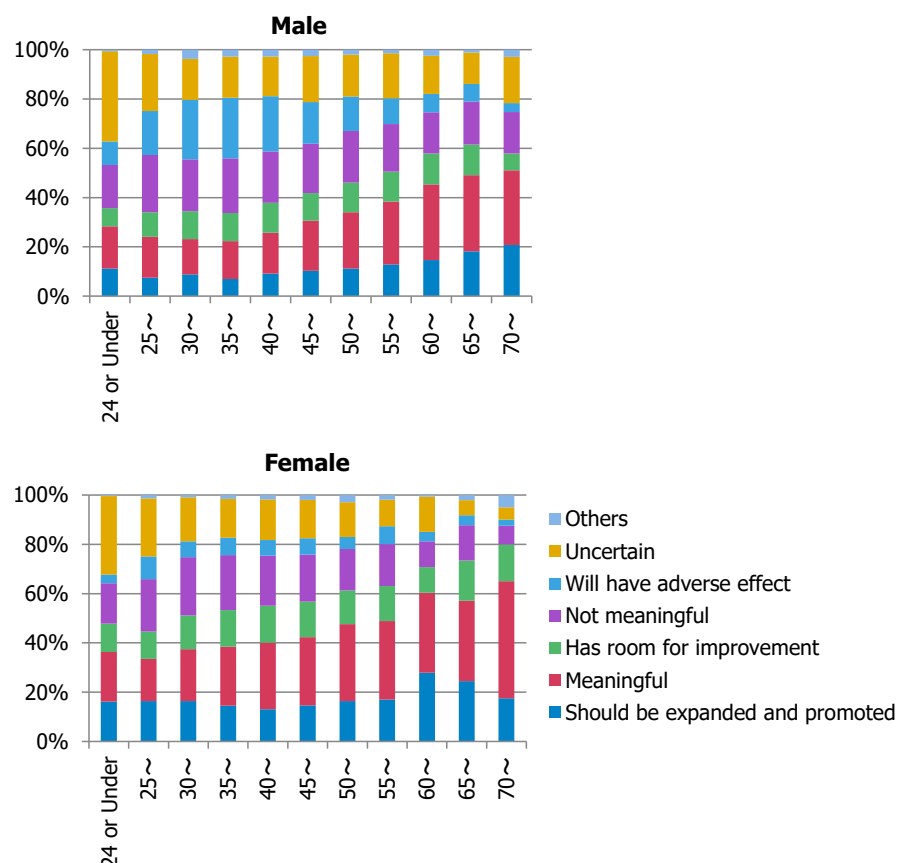
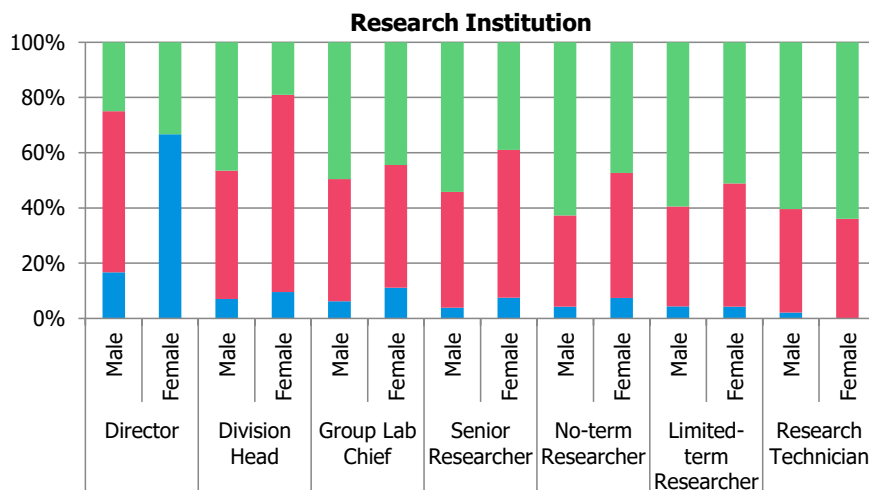
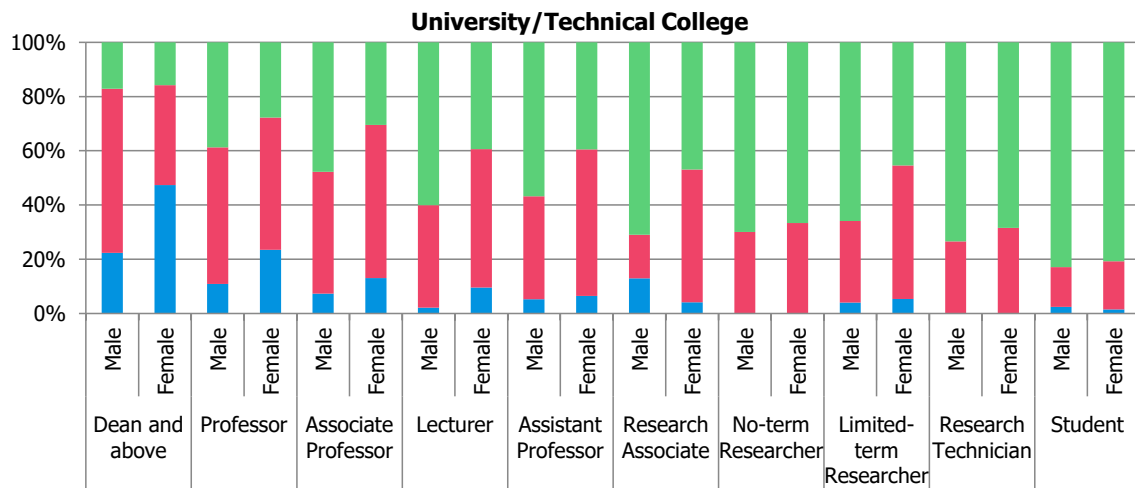


Figure 5.9 Perception of Numerical Target for Newly Hired Female Researchers by Age Group (Single Answer)

5.4 Perception of Numerical Targets from Respondents with High Awareness

Respondents who answered that they “well aware” or “somewhat aware” of numerical targets were asked how they perceived the significance of those targets (Figure 5.10). Considering “should be expanded and promoted” and “meaningful” responses to be positive perceptions, “has room for improvement” to mean the targets are accepted but with doubt, and “not meaningful” and “will have adverse effect” as negative perceptions, difference in perception was noticed between genders. In case of females, higher the awareness, higher the positive perception of numerical targets (Figure 5.11). For instance, among females who are well aware of the targets, those with a positive perception and think the targets “should be expanded and promoted” or is “meaningful” exceeded 60%. On the other hand, even if awareness is high, males that have a positive perception and think the targets “should be expanded and promoted” or is “meaningful” was about 30%. In particular, more than 30% of males who are “well aware” of numerical targets think the targets “will have adverse effect”, which differs greatly from the female perception.



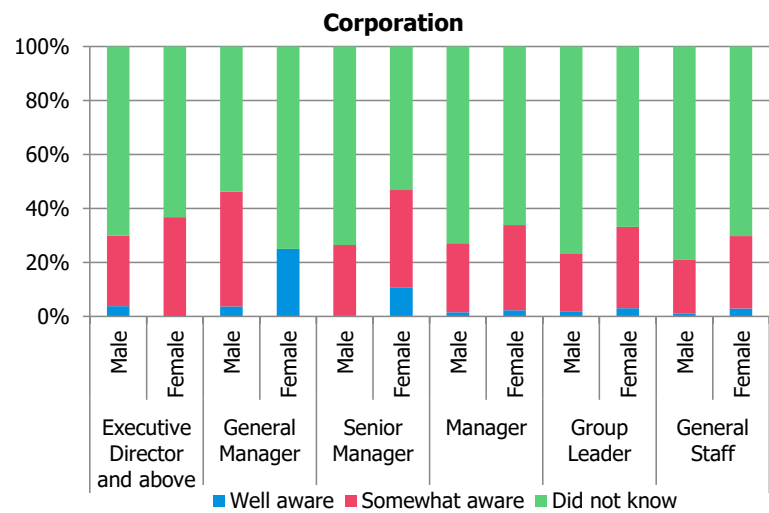


Figure 5.10 Awareness of Numerical Target by Job Position (Single Answer)

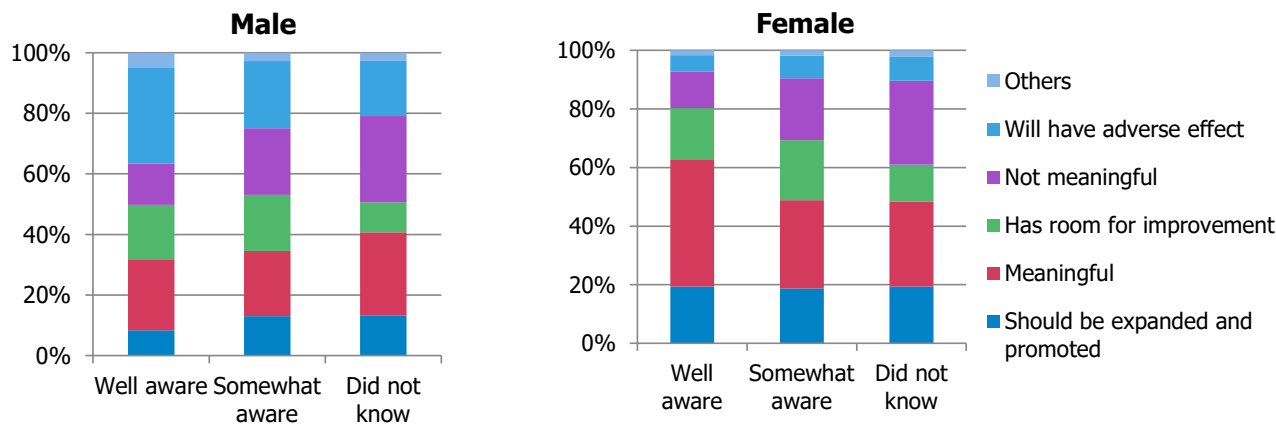


Figure 5.11 Awareness of Numerical Target and Perception on Significance (Single Answer) (excludes "uncertain")

For both genders, the positive perception has increased compared with the previous survey. Figure 5.12 examines how the perception of respondents with a high awareness of numerical targets has changed compared with the previous survey. In Figure 5.12, the sum of the “should be expanded and promoted” and “meaningful” response ratios is defined as “positive” and the sum of the “not meaningful” and “will have adverse effect” response ratio is defined as “negative”. To make a comparison between the third survey and this fourth survey, a bar graph of those “positive” and “negative” ratios (%) were created for each gender.

From the figure, it can be seen that the “positive” perception ratio has increased for both genders, while “negative” perception has decreased significantly over the last five years. The increase in the female “positive” perception is especially remarkable. Therefore, it appears that once aware, positive perception increases.

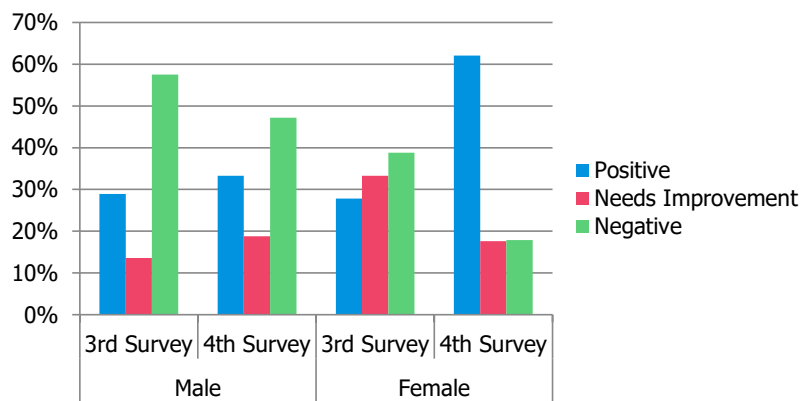


Figure 5.12 Awareness of Numerical Target and Perception on Significance Compared with Third Survey (excludes "uncertain")

5.5 Female Hiring Targets of Affiliated Institutions

Figure 5.13 shows whether or not numerical targets for female hiring exist at each institution. Compared with the awareness of numerical targets for female researchers (Figure 5.11), the ratio of the “uncertain” response to the awareness of numerical targets in the respondent’s own institution was somewhat lower.



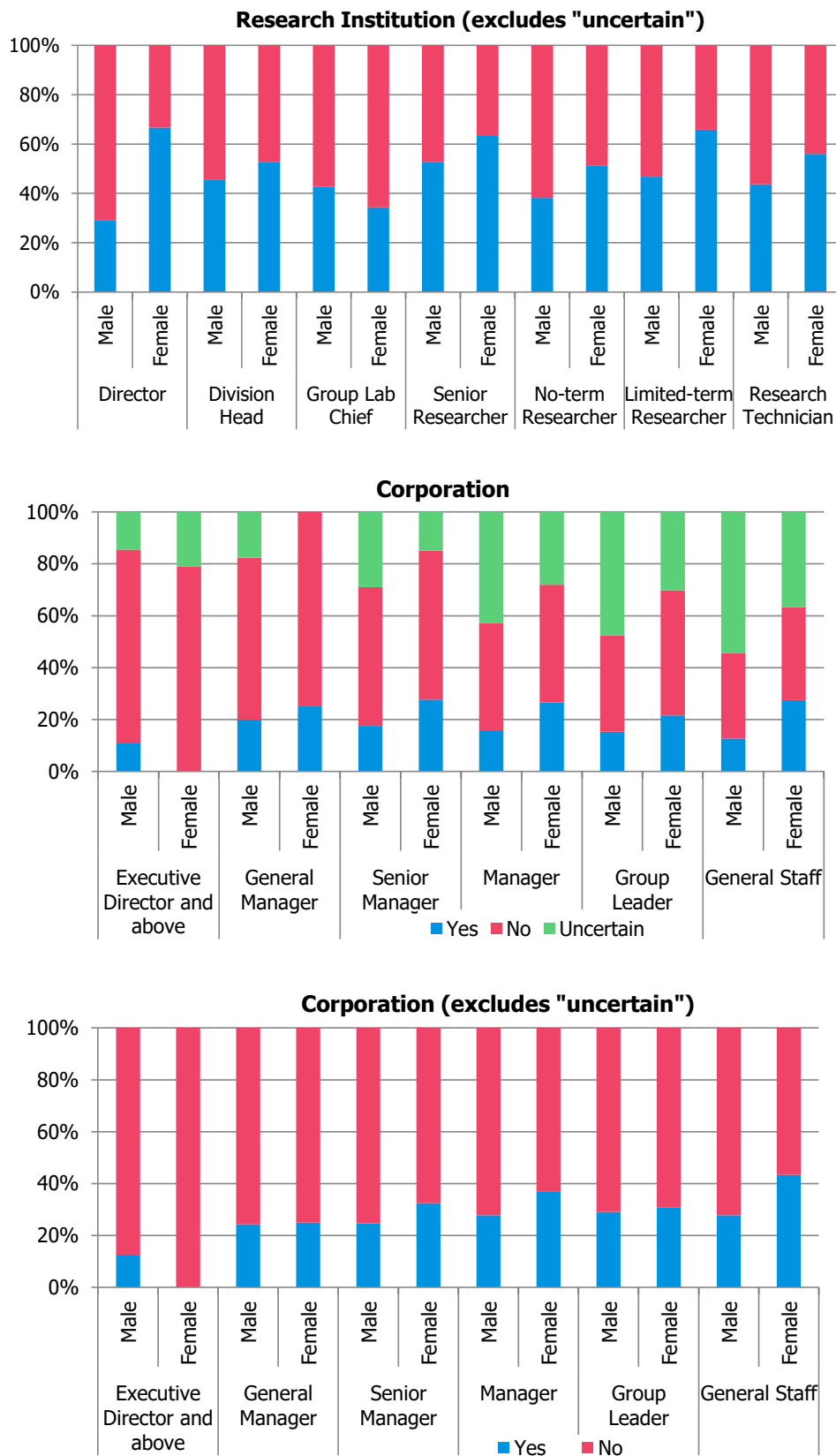


Figure 5.13 Awareness by Job Position of Numerical Target for Female Hiring in Affiliated Organization (Single Answer)

There was a big change in the responses to the question of whether or not targets are publicized if they exist (Figure 5.14). Publication of the targets and the awareness of publication have both increased since the third survey.



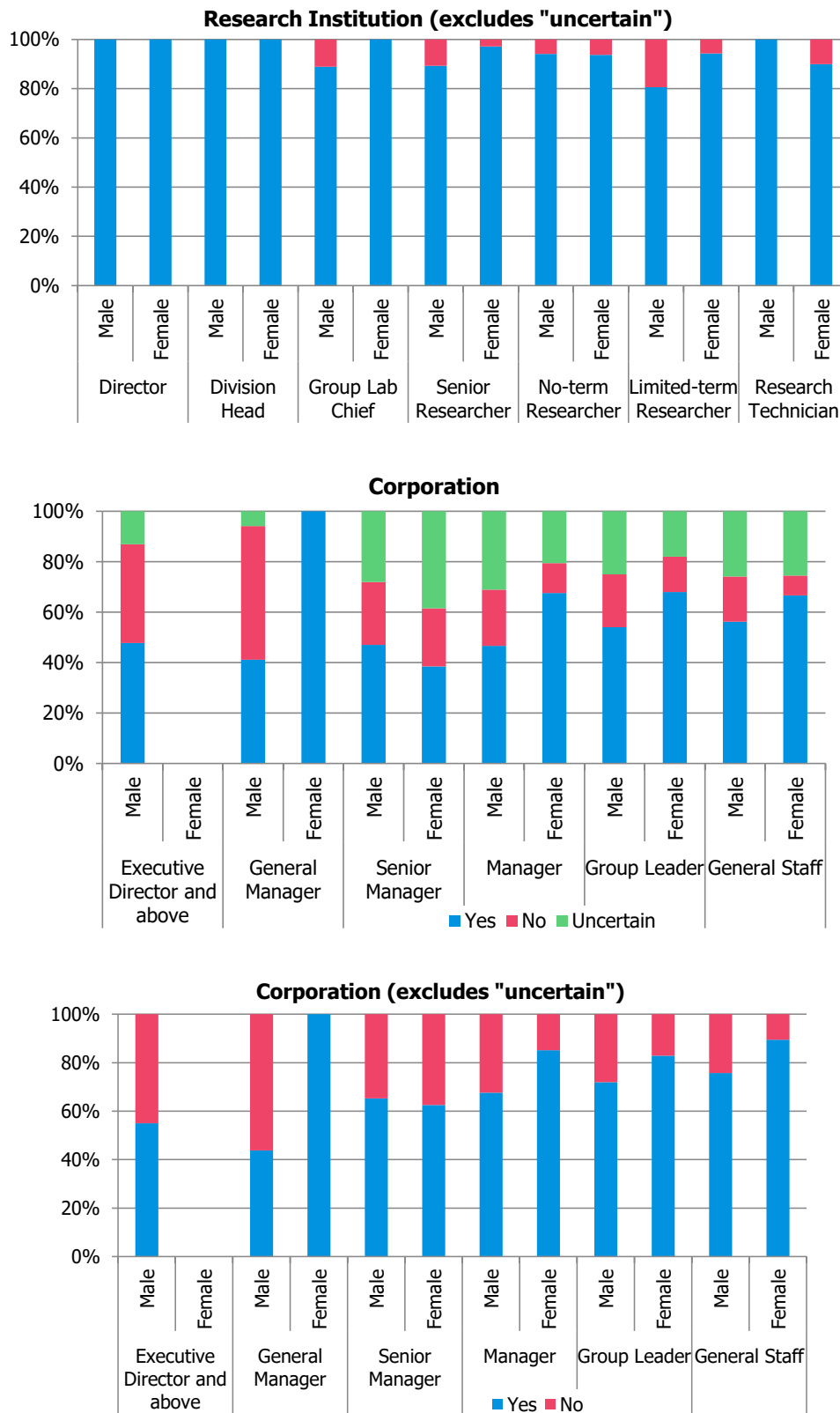
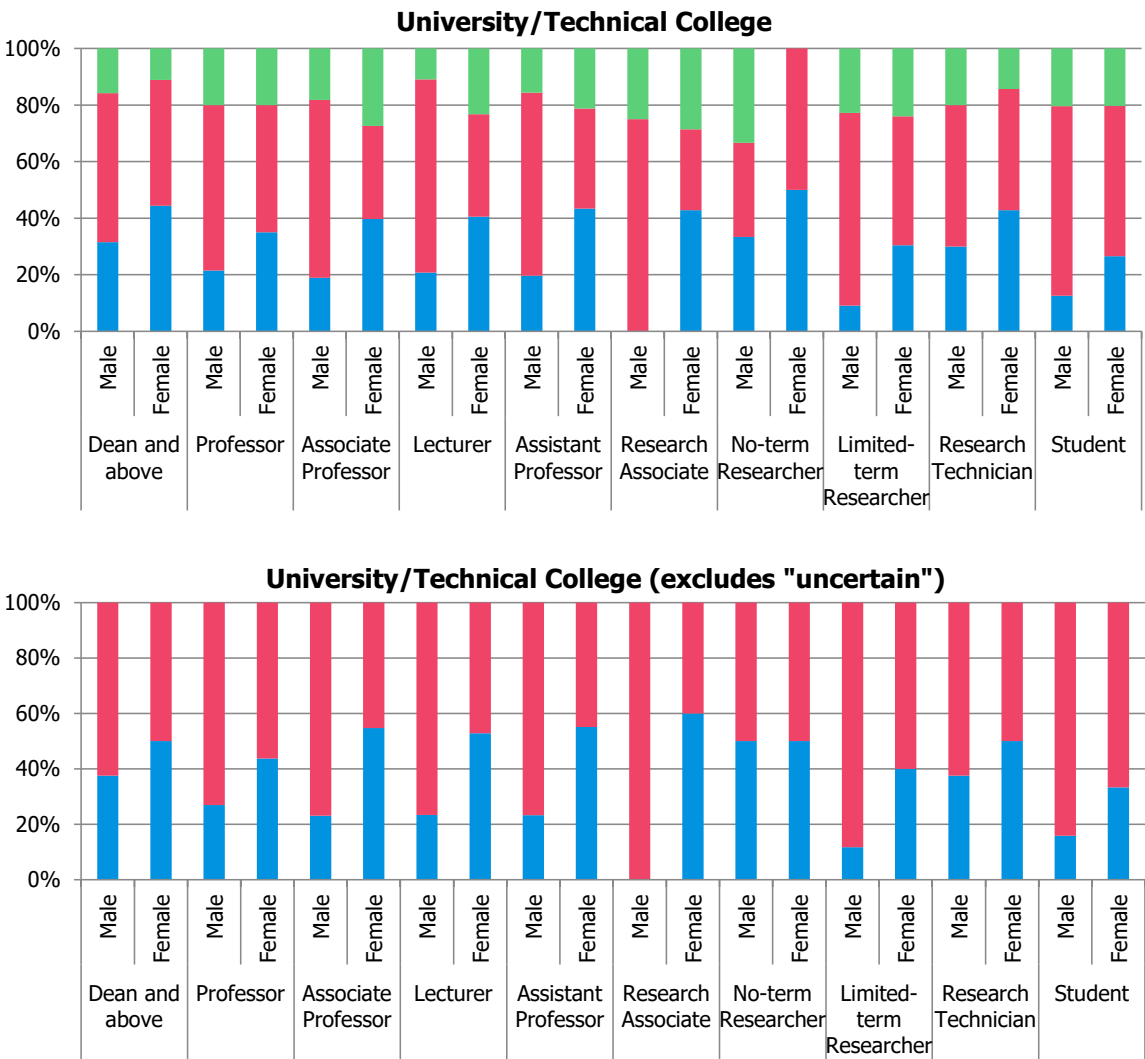
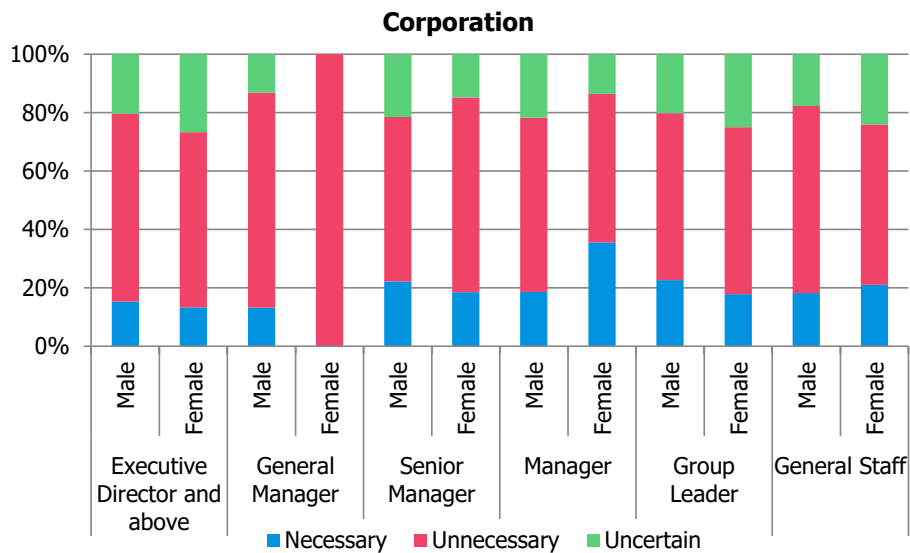
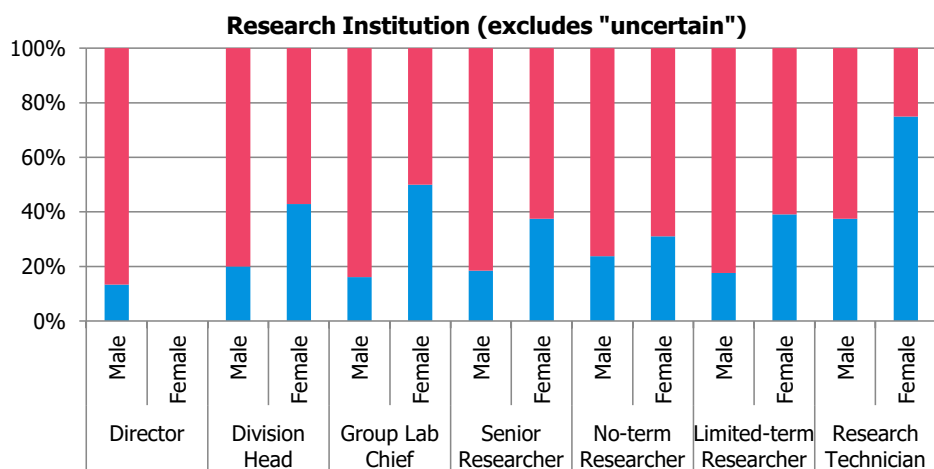
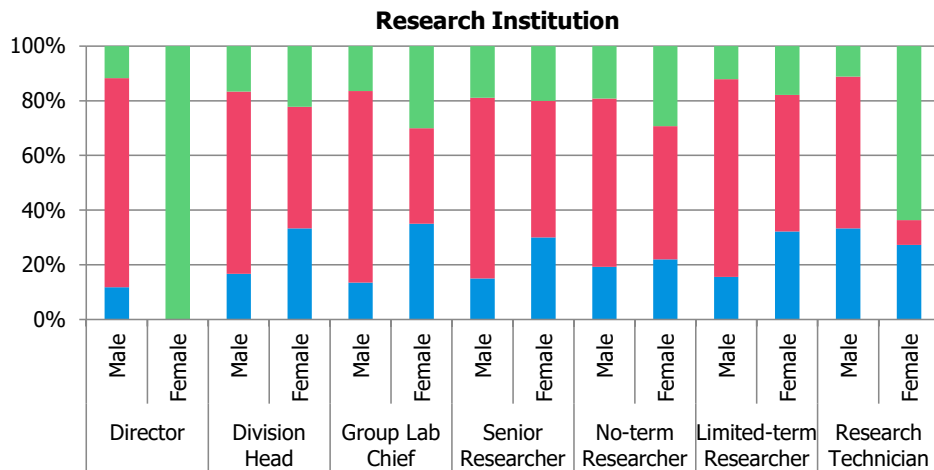


Figure 5.14 Awareness by Job Position of Publicized Numerical Target for Female Hiring in Affiliated Organization (Single Answer)

Like the third survey, the “necessity” of numerical targets for the hiring of female researchers was examined according to job position (Figure 5.15). In order to make a comparison with the third survey, discussion is carried out mainly on the ratios that exclude “uncertain” responses. In the third survey, the “necessary” response was higher for females of all job positions. However, in the fourth survey, that response was often lower for corporation females compared with the others. Even after being carried over from the 4th to the 5th Science and Technology Basic Plan, the purpose of setting numerical targets for the hiring of female researchers is not well understood or known. It may be necessary to rethink why Japan has established numerical targets for female researchers at the national level and that the same targets have been reestablished five years later then devise new policies. There were many written comments with regard to numerical targets for female hiring (Figure 6.4), and those from male respondents were overwhelmingly high accounting for 85% of the comments. For descriptions of the comments, refer to 6.2 (iv) Numerical Targets for Hiring of Female Researchers.





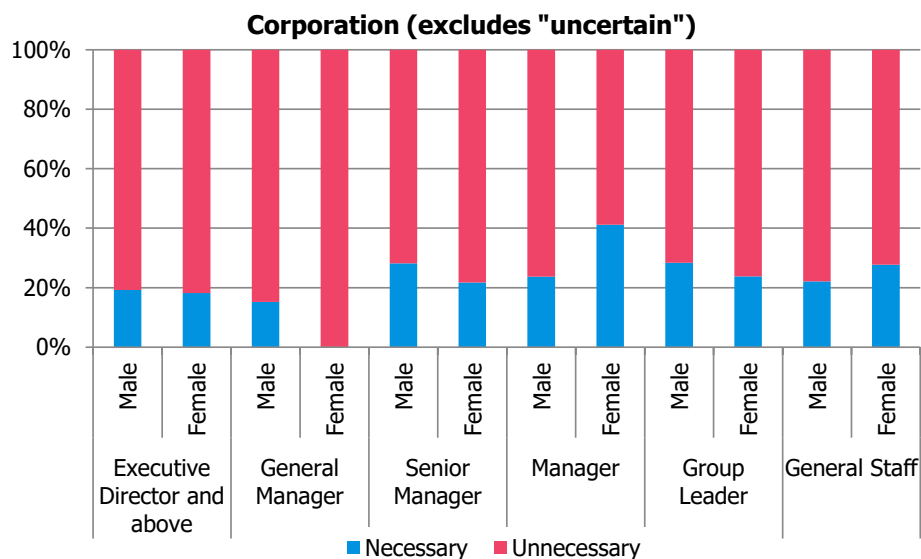


Figure 5.15 Perception by Job Position on Necessity of Numerical Target (Single Answer)

Chapter 6 Written Comments

The free written comments received during the 4th large-scale survey have been analyzed and the respondents characteristics along with the current situation, problems, perception and desires of the natural science researchers and engineers have been compiled in this chapter.

6.1 Respondents' Characteristics

Among the 4,571 written comments received, 1,379 (25%) were from females. Overall, 28% of total female respondents and 24% of total male respondents submitted comments (Figure 6.1.1). Most of the comments came from respondents in their 30's and 40's for both genders (Figure 6.2.1). The ratio of comments from females beyond age 35 was greater than that of males (Figure 6.2.2). Figures 6.3.1 and 6.3.2 show the number and ratio, respectively, of comments compiled by occupational field.

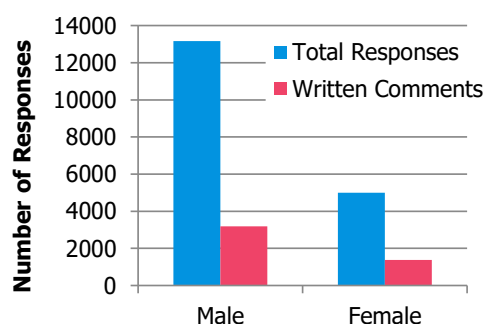


Figure 6.1.1 Total Responses and Written Comments

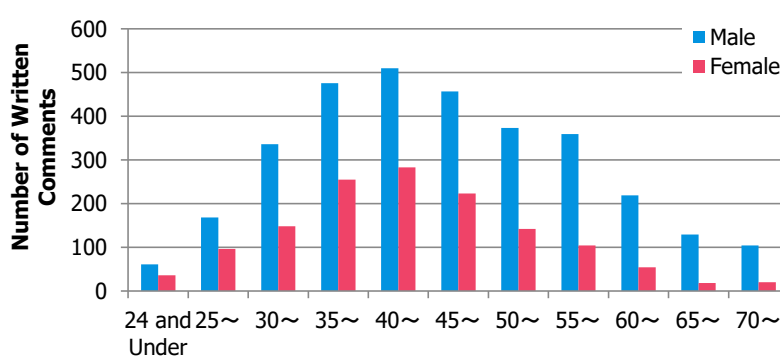


Figure 6.2.1 Number of Written Comments by Age/Gender

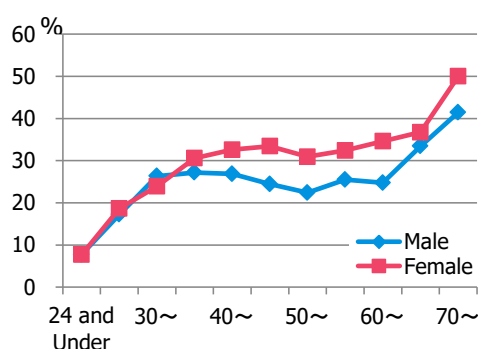


Figure 6.2.2 Ratio of Written Comments by Age/Gender

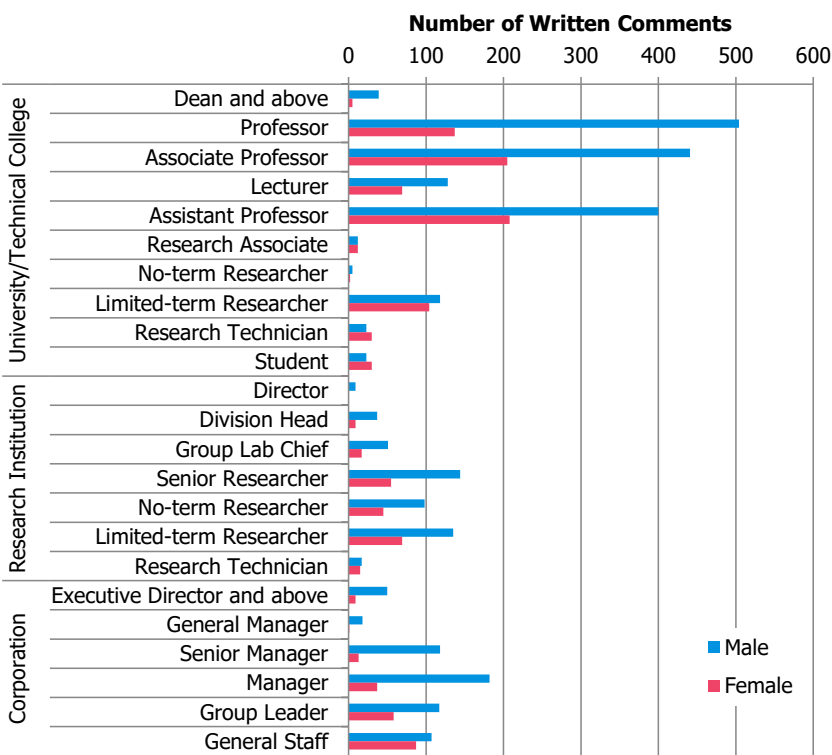


Figure 6.3.1 Number of Written Comments by Occupational Field

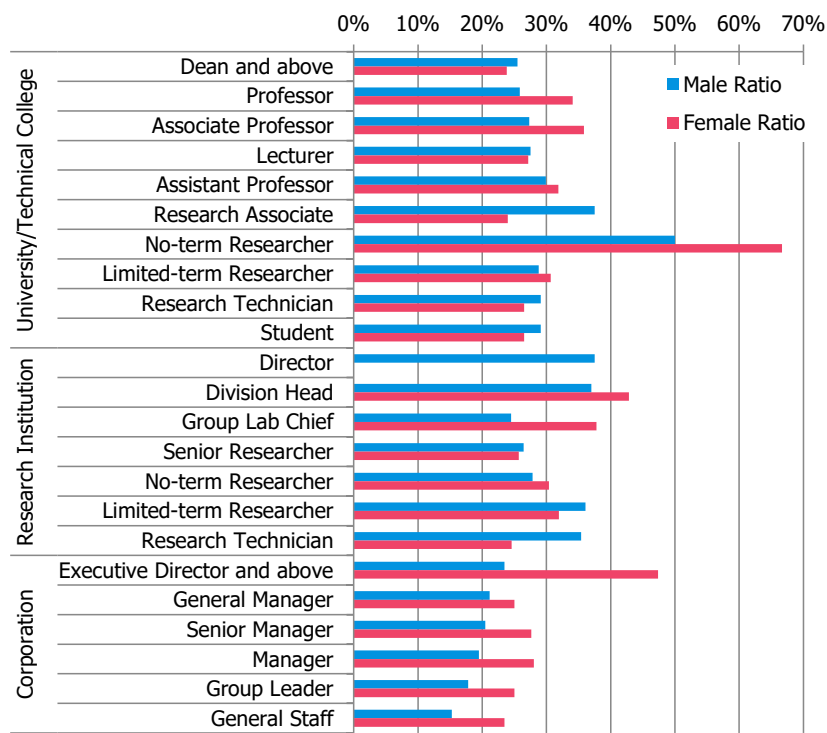


Figure 6.3.2 Ratio of Written Comments from Females by Occupational Field

6.2 Frequently Made Comments

Figure 6.4 shows the major topics and number of comments received for each topic.

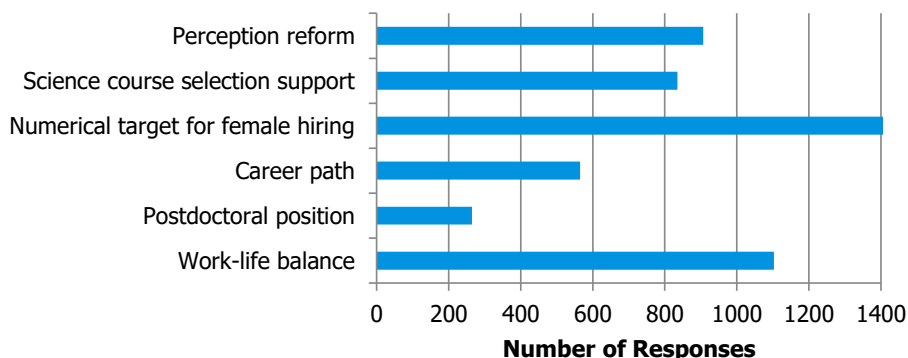


Figure 6.4 Major Topics and Number of Comments

(i) Work-life Balance

① Long working hours

There were many calls from both genders for the rectification of the current working environment.

- Tendency for Japanese workplace environment to judge people who work longer hours as harder working is a problem. (male, 40's)
- Condition for concentrating long hours on research is necessary to achieve results. (male, 40's)

② Dual Career Support

There were comments requesting positions that allow the continuation of career development while living together, the need for childcare support and social infrastructure when living separately, and disapproval with the current legal system.

- System to encourage couples to work at the same research institution is necessary. (male, 40's)
- If there is a system for universities and research institutions nationwide to provide posts that always allow research to be continued, I think female researchers will not quit their jobs and the ratio of female researchers will increase. (female, 30's)
- Even when living alone, establishment of a social infrastructure that does not force you to quit work for attending to child or nursing care is most important. (male, 50's)
- A legacy (law) system that assumes a male-centered society and is disadvantageous to females is still being applied. (female, 60's)

③ Child caring

Many females indicated their desire for an assortment of specific and diversified system related to childbirth and childcare while males desired an environment where they can participate actively in childcare. Furthermore, there were opinions that the difficulties of childbirth and childcare during postgraduate doctoral courses are hindering females' advancements.

〈Expanding day-care centers〉

- It would be nice to have a society where anyone can enter a day-care center at any time. (female, 30's)
- Anticipating expansion of day-care center at the workplace. (female, 20's)

- Not being able to place children in a day-care center when you are a doctoral student or postdoc is the fatal reason why a career ends. (female, 40's)

〈Allocation of assistant personnel during childcare leave〉

- In the thirties, just when research work is coming on track, you are faced with taking leave for childbirth and reducing work for childcare. (female, 30's)
- In organizations that have duties to educate, such as universities, it is necessary to ensure adequate staffing. Currently, staffing is being reduced and the situation is going in the opposite direction. (male, 40's)

〈Diversification of work system during childcare〉

- In order to secure research time, it is necessary to have a system that exempts all miscellaneous duties for a certain period. (female, 40's)
- It is necessary to create a system that allows you to engage in some R&D work at home during childcare. (male, 50's)

〈System improvement and consideration to allow males to participate in childcare〉

- If both spouses work and share childcare, support and consideration is needed for not only the wife but also the husband. (male, 30's)
- Make it mandatory for companies to force males to take childcare leave, and penalize companies if males with a child under 10 years of age work more than 40 hours a week. (female, 40's)

〈Inadequate childbirth/childcare system for doctoral graduate students and JSPS research fellows〉

- The fact that there is almost no income until completion of the doctoral program is a barrier to furthering education. Is it not the role of the government to provide financial support (for doctoral students)? (female, 30's)
- It is necessary to create a system that supports childcare in various ways while in school. (male, 20's)
- We should improve the situation where JSPS research fellow is not in an employment relationship with either the JSPS or the receiving research institution. (female, 30's)
- JSPS (researcher) having to interrupt employment for childbirth and childcare is a problem. (female, 30's)

〈Improvement of work support and evaluation method according to childcare situation〉

- In the current application for Grants-in-Aid for Scientific Research, the period for which research was suspended due to nursing care, childbirth, illness, etc. cannot be specified, and it is judged solely on research achievements. (female, 30's)
- Cutoff date for many of the new grant applications geared toward researchers returning from childcare is April, and it was useless for me since I returned in June. (female, 40's)
- Since childbirth and childcare delays career advancement, I would like people to stop defining young scientific researchers by age. (female, 40's)
- Workplace atmosphere that makes it difficult to leave work early when a child is sick and lack of understanding from the older generation are problematic. (male, 30's)
- If you do not allow postdoctoral workers hired with research grants to do tasks other than research, career development will be biased, and it will be difficult to consider work-life balance. (female, 40's)

④ Nursing care

Unlike childcare, there are many indeterminate factors in nursing care, and people that have experienced nursing care voiced their request to have that part incorporated into the support system.

- Service officials and executives know too little about the actual condition of nursing care. (male, 50's)
- Days taken for nursing care leave, requirements, etc. are insufficient compared to the actual situation. (female, 50's)
- Expansion of support and thorough understanding about nursing care is requested. (male, 40's)
- Eliminate age restrictions for subsidies. Would like all people to understand and tolerate the fact that childcare and nursing care slows down work over a long period. (female, 40's)

(ii) Limited-term Researcher (Postdoc) Position

About 70% of the comments related to limited-term researcher (postdoc) were from respondents in their 30's and 40's. Therefore, the opinions expressed in the comments are considered to represent the voices of the field.

① Impact of limited-term research work on life plan

There were many opinions from both genders that researchers who take on limited-term research jobs have difficulty planning their future, such as marriage and childbirth, and that there was a high probability of having to live separately from their spouse. Immediate action on these problems is desired.

〈Must childbirth/childcare be given up to get a no-term job?〉

- Assistant professor on a five-year tenure track must give up childbirth and childcare to produce results. At least a 10-year term is required. (male, 30's)
- It is difficult to make plans for the future such as marriage and childbirth on a limited-term/postdoc work arrangement. (female, 40's)

〈Living together with spouse is difficult〉

- In order to achieve a balance between home and work, it is necessary to have a mechanism that provides both stable employment (no-term) and co-living condition for spouses. (female, 30's)
- The system that considers separate living as natural is not good. (female, 40's)

〈Entering an authorized day-care center is difficult for limited-term researchers〉

- Since contract renewal is not promised, reservation for entry into authorized day-care center cannot be obtained. Therefore, the use adjustment index of authorized day-care center becomes low, and entry into authorized day-care remains difficult. (male, 30's)

② Age restriction on open recruitment

In many cases, an age restriction (or elapsed years after obtaining a doctoral degree) is placed on open recruitment of research positions. Apparently, this is a barrier for female researchers to obtain jobs if they have suspended research for childbirth and childcare.

- Please do not apply an under-40 age restriction on open recruitment. (female, 40's)
- Under the tenure track system, a "young researcher" is uniformly defined as "within 40 years of age" without considering females' childbirth and childcare. (male, 60's)
- It is necessary to have a mechanism that excludes time taken off from work for childbirth and childcare when evaluating performance. (male, 40's)

(iii) Career Path

A variety of problems that hinder females' career path was pointed out and urgent action is demanded to improve the problems.

① Recruitment and promotion of females

There were opinions that prejudice against females and time restrictions such as for meetings affected the promotion of females to managerial positions. On the other hand, there were opinions that it is also necessary to reform females' perception when training them for managerial positions.

〈Prejudice against female researchers〉

- When I was promoted or won an award, I was told it was because special consideration was given to females. (female, 30's)
- Some male researchers think female researchers are bothersome. (female, 40's)
- I wish see workshops incorporated into workplaces or university classes to make people realize male/female role assignments are unconsciously being made and different assessments are being made depending on gender. (female, 40's)

〈Barriers against female managerial positions〉

- Many of the meetings are held in the evening, so it is difficult for the parenting generation to juggle time. (female, 50's)
- Although the workplace is trying to employ and promote females, the females themselves have a strong sense of not wanting managerial positions. (male, 60's)
- I think if half of the managerial positions are appointed to females, the organizational thinking will not be male-biased. (female, 40's)

② Age restriction

There were opinions that elimination of age restriction during recruitment and extension of the retirement age are effective measures in increasing the number of female applications.

- Considering that the female's work efficiency is reduced by half during childcare, it is necessary to provide an environment where they can work longer and to eliminate age restriction on the various types of employment. (female, 40's)

③ Role model

It was made clear that many respondents feel the need for an appropriate role model.

- Female researchers who are invited to speak as role models are not at all helpful because their situations are too different from those of female students and young female researchers who are suffering in the field. (female 40's)
- Female researchers in managerial positions who have made achievements while raising children are few. (male 30's)
- Senior researchers who are not rewarded for their hard work do not make good role models for the younger generation. (female 50's)

④ Actively promoting females in academic societies, etc.

Opinions suggest actively appointing females is an effective way to promote female participation in the administration of academic societies.

- I think it is necessary for the government to instruct the head society members to set female quotas or give priority to females in such situations as selecting speakers for society conferences. (male 40's)
- I think that actively promoting females as chairpersons at annual conferences of each academic society will lead to a gradual increase in female officers such as councilors and directors. (male, 50's)

⑤ Others

There were calls for improvement to the government's Management Expenses Grants and Excellent Young Researchers Program from the standpoint of supporting the career development of female researchers. There were many opinions that females still felt the inconvenience about the use of their maiden name.

〈Impact of reducing research expenses and labor costs〉

- Under the current situation where management grants to national universities are reduced and fewer researchers are required to do the same amount of work as before, the burden on females raising children is extremely heavy. (female, 40's)
- The reduction of basic research expenses and labor costs is casting a dark shadow on the future of the academic community. An active involvement of the government is desired for securing human resources regardless of gender to support the future of science and technology. (male, 50's)

〈Necessity of using maiden name〉

- I heard that in some educational and research institutions the use of the name in the family registry is semi-compulsory within the organization. (male, 40's)
- I strongly desire the legal system and administration to be reformed so that organizations can positively recognize separate male and female surnames. (male, 40's)
- When acquiring a patent, maiden names is not recognized, so recognize separate surnames or at least allow maiden names to be recognized when acquiring patents. (female, 40's)

〈Excellent Young Researchers Program〉

- Although the number of female researchers has increased, the number of positions that support males and positions that do not offer promotions is increasing. The Excellent Young Researchers Program needs to be innovated, for example, creating a position for females who can make decisions (such as professors). (female, 40's)
- How about creating slots for females in the Excellent Young Researchers Program and other programs? (male, 60's)
- The Excellent Young Researchers Program based on the annual salary system goes against gender equality, as it makes employment of researchers more destabilizing and makes life planning difficult. (male, 50's)

(iv) Numerical Target for Female Researcher Hiring

Eighty-five percent of males and 63% of females who responded to this measure stated dissenting opinions. On the other hand, 9% of males and more than 20% of females agreed with the measure. It is believed in the background there is a lack of understanding in the intention such as "utilization of excellent and diverse human resources" and "promotion of perception reform on gender equality" of the measure. There were also voices of concern about the intergenerational gap, in which the female ratio increased only for young recruits. The representative opinions are given below.

① Agree with setting numerical targets

- Society will not change with perception reform. I think the first and only effective way is to set numerical targets and force the increase of high-ranking female professors and researchers as quickly as possible. (male, 60's)
- Introducing females into institutions that are filled with "professional male researchers" will never proceed if left to natural course. (female, 30's)
- I think we need to examine the necessary measures at the actual workplace while we first increase the ratio of females. (female, 30's)
- I think the university environment will change dramatically if the female ratio of executives, professors and above exceeds 30%. (female, 40's)
- I think it is important to set numerical targets for females in light of international standards. (female, 30's)

② Disagree with setting numerical targets

- I am worried that giving females preferential treatment will raise voices of unfairness, and the females may become targets of resentment. (female, 40's)
- People should be evaluated by a highly objective evaluation method based on ability and performance, regardless of gender. (male, 40's)
- At present, the younger generation is stuck with paying the price for the past. (male, 30's)
- Recruitment of young female personnel is increasing. Rather, the higher age group should be balanced. (male, 40's)

(v) Supporting Science Course Selection for Middle and High School Students

Many respondents said that the ratio of female students in primary education should be increased first. The following are representative opinions.

<Promoting science courses to female students>

- I think it is important to get students interested in science at elementary schools to increase the number of future researcher candidates. (male, 50's)
- I think it is important to have activities to get middle and high school students interested in science. (female, 30's)
- Activities are needed to make female middle and high school students feel that science researcher is an attractive occupation. (male, 40's)

<Educational activities needed to direct human resources toward science and technology >

- Propaganda is important to get children to think that girls are free to spread their wings just as well as boys. (male, 60's)
- I think girls' interest and motivation will be enhanced by disseminating information and conducting education in a way that makes science and technology easy to understand. (female, 50's)

(vi) Necessity of Perception Reform

Among the respondents that submitted comments, about 20% of females and 10% of males indicated a need for perception reform. There are cases where perceptions of workplace members, families and educators are hindering the participation of females in research and technical jobs. Issues concerning perception are considered solved for the first time through the combined efforts of policies, diverse human resource recruitment and education, and continued efforts are demanded in the future. The following are representative opinions.

① Social bias

- Females tend to be taught not to stand out. (female, 40's)
- The major problem is the general notion that "girls are weak in science". Being raised in such a society will make you feel inapt in that field. (female, 40's)
- Unless the social perception that housework, childcare and nursing care are duties of the female is changed, females will not be able to concentrate on work. (male, 40's)

② Male bias

〈Emphasize female appearance/attitude and despise females with knowledge/skills〉

- In the science and technology fields, what impedes gender equality is the underlying pervasive perception in society that emphasizes the appearance and attitude of females and despises females with specialized knowledge and skills. (male, 30's)
- The upper organization consisting of males only tends to raise females who are not capable, cute and obedient to higher positions and count them as part of the numerical target. (female, 40's)

〈Bias view that female ability is inferior〉

- Many males believe females' scientific abilities are low and that Marie Curie is an exception. (male, 80's)
- Males who are 60 and older have a discriminatory sense against females, which they are not conscious of themselves. (male, 50's)
- A director-class member once said to me, "There is no way a female postdoc can achieve this kind of outcome. Someone else must have done it". The current situation will not change unless the perception of the current executive-class (50's and 60's) improves. (female, 30's)

〈Domination of males over females〉

- Eliminating the idea of male over female from the thoughts of males is top priority. (female, 50's)
- Discriminating party (especially males) often does not know the actual situation of the discriminated party. (female, 50's)

〈Unconsciously giving preference to males〉

- Promotes understanding that buildup of male preferential treatment such as a biased view that regards males as excellent, giving challenging tasks to males and praising males will make a big difference in the long run. (female, 40's)
- It is impossible to conduct research activities on par with males unless you eliminate subconscious notions such as, "You're female and you have children". (female, 40's)
- Because there are fewer female evaluators, the evaluation tends to be biased (in favor of males). (female, 50's)

③ Female bias

- Many females think there is nothing they can do about the difficulties of furthering their careers or challenging new fields once they have quit their regular jobs. (female, 50's)
- Many female employees have a strong sense that they are assistants to male employees. (male, 50's)
- Females themselves have a strong will of not wanting to be in managerial positions. (male, 60's)

④ Education environment

- Perception reform of elementary and middle school teachers. (female, 50's).

- We need to reform the perception that females are inapt in the field of science. In order to do so, it is necessary to reform the education method in elementary, middle, and high schools and the perception of parents. (male, 40's)
- I feel that education is most important so as not to plant stereotypes of "the role of males and females" from childhood. (female, 50's)
- I think that education that more clearly conveys the significance of females' activities in society is necessary beginning at primary and secondary education stages. (male, 50's)

⑤ Home environment

- I think one of the main reasons for the low number of females in the science and technology field is that their parents are opposed to the field being "non-feminine" when making course or job selections. (female, 40's)
- It is necessary for parents to change their perception so as not to put gender discrimination in way when making course selections. (male, 60's)
- It is necessary to reform perception including early elderly people. Females receive the most pressure from their husbands' parents. (male, 40's)

(vii) Others

〈Education and research policies〉

- In order to prevent the decline of Japan's science and technology fields, policies that fit with the life stage design of young researchers from the viewpoint of gender equality are necessary. (female, 40's)

〈Need for networks〉

- Industry-government-academia collaboration is essential. (female, 40's)
- Condition where individual choices can be made through the provision of wide range of information is necessary. (male, 30's)
- I want the opportunity to hear stories from people who will be role models and exchange information with people facing the same issues as myself. (female, 30's)
- I want information on the efforts of each research institute in order to create a situation where I think I can challenge my career even while I am child caring. (female, 30's)
- Because the number of females is small, there are no networks and no information available leaving me isolated. (female, 30's)

〈Exchange across fields〉

- Additional things will be visible if gender equality conditions in other fields such as humanity and social science are examined and compared against the science and technology fields. (female, 60's)
- We should be more socially open by actively communicating with other similar activities outside the science and technology fields. Differences other than gender should also be considered. (male, 40's)

Survey Wrap-up

Chapter 1: Summary of Results

1.1 Basic Data

- Total number of respondents: 13,162 males and 4,997 females. Majority of the respondents were between the ages of 35 to 54 with the peak age in the “40 to 44” range. The respondents’ affiliated institutions were 59% universities, 15% research institutions, 21% corporations and 2% government. The overall doctoral degree acquisition rate was 65%. Approximately 85% of the respondents were employed. About 80% of both genders had jobs in the research and education sectors.

1.2 Working Conditions

- Ratio of respondents under no-term employment was higher than the ratio of respondents under limited-term employment for both genders. The ratio of limited-term employment was high in universities/technical colleges. Many of the respondents under limited-term employment are currently under terms lasting “10 years or less”, and the ratio of respondents that have worked under limited-term employment totaling more than 10 years was 20% overall. More than 40% of males and about 50% of females currently under no-term employment have experience working under limited-term employment.
- More than 70% of males and females have experienced job change, relocation or leaving a job. About half of both genders have experienced relocation without changing their occupation. Five percent of males and 12% of females have experience leaving a job. The highest reason for job change, relocation or leaving a job was to “further my career” accounting for about half of the responses for both genders. “End of contract” response was mostly received from the younger respondents age 40 and under. Reasons frequently received from females were “marriage (8%)”, “caring for children (9%)” and “job relocation of family member (8%)”.
- It is most common for respondents to work at the office from 40 to 60 hours per week, with males working somewhat longer. Working hours at the office and R&D hours have both decreased significantly compared to the previous survey. Working hours of females age 30 to 44, which overlap with the child-raising period, have decreased.

1.3 Work and Family

- There is a gender difference in the ratio of respondents having spouses with the males having a higher ratio. There is no gender difference in the marital status up until the early 30’s, but a difference begins to occur in the late 30’s. More than half of the males’ spouses are unemployed. Ninety-eight percent of females’ spouses are employed, and many are affiliated with universities/technical colleges and research institutions.
- About 30% of males and 50% of females have experience living separately from their spouses.
- Two thirds of females have no children and more than half of males have children. The average number of children reaches two at age 60 for males, but the average for females remains approximately at one from the 40’s to the early 60’s.
- As for work after childcare leave, males often continue the same work before the leave, but females experience delay in promotion and/or change of work or department due to employer instructions or their own requests.
- About 30% of both males and females have a family member that requires nursing care. Awareness level of programs for taking nursing care leave was high.

1.4 Gender Equality

- The most chosen reasons for the low proportion of female researchers were “balancing family and work is difficult” and “returning after child/nursing care leave is difficult”. Males tended to choose gender related reasons such as “difference in male and female abilities” and “difference in male and female qualifications” more than females. Additionally, the reasons given by both genders for the low proportion of females in leadership positions were “balancing family and work is difficult”, “frequent early retirement or leave of absence”, “female ratio is low for the generation currently in leadership position” and “lack of consideration for child and family care in performance evaluation”.
- Both males and females believe “awareness reform” is necessary to promote gender equality. In particular, “reform male awareness” was cited by many of the respondents. Following from the third survey, respondents continue to call for “increase male participation in housework and childcare”, “expand support of child and nursing care”, “encourage supervisor understanding” and “expand types of working arrangements” bringing to our attention the need to further enhance the workplace environment.

Chapter 2: Important Issues: Gender Gap in Job Positions

- There was no significant change in job position index trends of the affiliated institution compared to the past surveys, and the job position index rose smoothly according to age for all institutions. The promotion curve by age for males tops that of females, and at about age 30, female promotions begin to lag. Although gender differences at universities/technical colleges and research institutions are larger than at corporations, the differences are improving compared to the past surveys.

Chapter 3: Important Issues: Child and Nursing Cares

- There is no correlation between annual salary and the number of children for females, but for males, the number of children increases in proportion to annual salary. There is a strong tendency for females to bear the time burden and males to bear the financial burden for children.
- The percentage of those taking childcare leave is on the rise. The percentage of corporate females taking childcare leave has surpassed 95%. At universities/technical colleges, 30% have not taken childcare leave and at research institutions, the rate is 20%. The percentage of males taking childcare leave is still very low.
- About 40% of males with preschool children did not take leave because “leave was unnecessary”. The remaining 60% needed to take leave, but could not, and more than half of those males cited “work environment” as the reason. The reason females at universities/technical colleges and research institutions were unable to take childcare leave was it would be “disadvantageous to their career development” due to “workplace environment”. Forty-five percent of corporate females stated that they “could not enter daycare as desired”, and there were many responses stating that the “leave was shortened than desired to enter daycare starting in April”. Furthermore, childcare leave program for limited-term employees is not fully developed.
- The average number of children is more than 1.5 for males who have never lived separately from their spouses or who have lived six or more years apart. On the other hand, there was no significant difference in the number of children for females whether they had experience living separately or the length of separation. Except for corporations, the average length of separation was longer for females. About half of the males did not consider options to avoid separate living, but 61% of females sought options and half of those were able to avoid separate living. “Did not consider” response was largely received from respondents at corporations followed by those in government, and the response was especially large from males.
- About 30% of respondents had a family member requiring nursing care and most of those respondents were in the age 60 to 65 range.

- In balancing work and child/nursing care, “expanded child-care facilities and services” received the highest response from university/technical college males of all positions. On the other hand, “expanded nursing-care facilities and services” was the highest response from female deans and professors while “workplace atmosphere” was the highest with female lectures. In corporations, the highest response for both genders was divided according to job position. “Expanded child-care facilities and services” was the highest with executive directors/group leaders/general staffs while “expanded nursing-care facilities and services” was the highest with senior managers/managers.

Chapter 4: Important Issues: Limited-term Employment and Limited-term Researcher (Postdocs)

4.1 Basic Data for Limited-term Employment

- Most of the respondents working at corporations are under no-term employment regardless of gender or age, but about 30% of respondents at universities/technical colleges and research institutions are under limited-term employment. At universities/technical colleges and research institutions, the percentage of males under limited-term employment is high until age 35, whereas for females, the percentage of limited-term employment remains high even after age 35. The percentage of females under limited-term employment at universities/technical colleges exceeds 40% even beyond age 40, and that percentage remains higher than other institutions until age 50. Annual salaries of limited-term employment are lower than that of no-term employment for all job positions. In comparison between genders, annual salaries of females are low regardless of occupation or employment type.

4.2 Aging of Limited-term Employment

- As time passes after doctoral degree acquisition, the percentage of no-term PIs increases and there is a shift to a higher job position. However, half of those that acquired a doctoral degree six to ten years ago and 30% of those that acquired a doctoral degree 11 to 15 years ago still remain under limited-term employment. As the elapsed time after doctoral degree acquisition becomes longer, gender difference becomes more apparent. The ratio of PIs is lower and the ratio of limited-term researchers and NPIs is higher for females than males.

4.3 Employment Status of Limited-term Researcher/NPI

- Female ratio of limited-term researchers is rising with age. Number of limited-term researchers aged 40 to 65 has increased significantly compared to the previous survey.
- About half of the limited-term researchers and NPIs work more hours than the contracted hours.
- The annual salaries of limited-term researchers are concentrated between 2 million and 5 million yen regardless of age, and 65% of the total falls in this range. The average annual salary by age is nearly flat at about 4 million yen for limited-term male researchers and about 3.5 million yen for limited-term female researchers. At age 30 to 39, the average annual salaries of limited-term researchers is about 2 million yen lower than that of corporations in general, and the difference widens as age increases.

4.4 Tenure Track

- In the age distribution of tenure employment, those in the 35 to 45 year age group were the highest at just under 20% of the total. Males under tenure employment were slightly higher than females. Furthermore, for both genders, most of those under tenure employment have had their doctoral degrees for 6 to 10 years.
- Ratio of tenure employees that work more than 40 hours a week was higher than the ratio of non-tenure employees and the portion of workplace hours spent on research is low for both males and females. Annual salaries of tenure employees are higher than salaries of non-tenure employees, but female salaries are lower than male salaries for all ages. Moreover, the difference in annual salaries between tenure and non-tenure employees widens as the age increases.

Chapter 5: Important Issues: Program and Policy Awareness

5.1 Familiarity with Recent Laws and Policies

- The degree of law/policy familiarity from highest to lowest are “Fourth Basic Plan for Gender Equality (Approved December 2015)”, “The Act on Promotion of Women’s Participation and Advancement in the Workplace (Effective April 1, 2016)”, “Excellent Young Researchers Program (March 2016)” and “5th Science and Technology Basic Plan (Approved January 2016)” with “familiar” responses being 41%, 34%, 29%, 14%, respectively.

5.2 Support Programs Currently Underway for Female Researchers

- Comparing the familiarity of each support program by affiliated institution, “① Restart Support after Childbirth/Childcare (RPD Program)”, “④ Childbirth and Childcare Consideration in Scientific Research Grants” and “⑤ Strategic Basic Research Programs’ measures for considering childbirth and child-caring” tend to have similarities in familiarity, and about 60% of PIs and NPIs at universities and research institutions thought the programs are “meaningful”. “③ Initiative for Realizing Diversity in the Research Environment” had the lowest number of “meaningful” responses and about half of the respondents were “unaware” of the program. “② Science Course Selection Support for Middle and High School Females” and “⑥ Challenge Campaign” had high ratios of “uncertain” and “not meaningful” responses regardless of affiliated institution. “Meaningful” responses were high with PIs and those in managerial positions.

5.3 Numerical Targets for Hiring Female Researchers

- Numerical targets for hiring of new female researchers as stated in the “4th Science and Technology Basic Plan” (30% in natural sciences overall; 20% in science, 15% in engineering, 30% in agriculture, 30% in medicine, dentistry and pharmacology combined) were not achieved and have been carried over to the “5th Science and Technology Basic Plan”. The awareness of numerical targets at universities/technical colleges and research institutions increases for both males and females as job position rises. Regardless of gender, awareness does not reach 50% in any of the positions at corporations.

5.4 Perception of Numerical Targets from Respondents with High Awareness

- In case of females, higher the awareness of numerical targets, higher the positive perception. Among the females that are well aware of the targets, over 60% think the targets “should be expanded and promoted” or is “meaningful”. On the other hand, even if awareness is high, males that think the targets “should be expanded and promoted” or is “meaningful” was about 30%. More than 30% of the males “well aware” of the targets think the targets “will have adverse effect”. Although positive perceptions are growing for both genders, about 14% of all female respondents and about 11% of all male respondents believe there is “room for improvement”.

5.5 Female Hiring Targets of Affiliated Institutions

- Awareness of setting numerical targets for female hiring in one’s own institution is gradually increasing. Additionally, publication of the targets itself and the awareness of publication are both slightly up. Among university/technical college respondents who are in a position to make decisions on human resource affairs (deans and professors), 44% of males and 38% of females replied that a numerical target is set in their institution. The percentages were 30% of males and 50% of females for directors and division heads of research institutions. In case of corporations, those that replied there is no target setting were still high in all job positions.

Appendix 1 Questionnaire

Fourth Large-Scale Survey of Actual Conditions of Gender Equality in Scientific and Technological Professions

This year, EPMEWSE will celebrate its 14th year since it was established with the cooperation of natural science-related academic societies. In order to understand the current work/life environment surrounding researchers and engineers of natural science with regards to gender equality, three large-scale surveys (2003, 2007, 2012) were conducted with each receiving about 20,000 responses. The survey results have been cited frequently as valuable statistical evidence when discussing the various problems faced by female researchers and engineers. Furthermore, proposals based on the results have been seen in government policymaking and subsequently various other measures addressing gender equality are beginning to gain traction. This is the fourth time the survey is being conducted. With the number of participating academic societies (including observers) reaching 90, it is a large-scale survey targeting nearly 500,000 society members. The continuity of the survey is extremely important in clarifying the current reality as well as changes in the awareness of gender equality issues, verifying the effectiveness of government programs, and identifying new issues. We would greatly appreciate the active cooperation of as many scientists and engineers as possible in completing the questionnaire. For those that have taken part in the previous surveys, we would be thankful if you can again spare a moment of your time to participate.

Thank you.

Haruko Ogawa, Ph. D., 14th EPMEWSE Chair

Naomi Kitagawa, Ph. D., Questionnaire WG Chair

Japan Inter-Society Liaison Association Committee for Promoting Equal Participation of Men and Women in Science and Engineering (EPMEWSE)

The questionnaire includes 42 questions and will require 20 to 30 minutes to complete. It is not possible to stop and save the questionnaire prior to completion. However, the answer session can be kept active for 10 hours as long as the Web browser remains open. Questions other than those labeled as “Required” can be skipped if you find them difficult to answer, but it is our hope that you would answer all questions.

Only respond to one questionnaire per person even if you are associated with several academic societies, and please check each of the societies you are affiliated with in Q5.

Upon answering the questionnaire, please acknowledge the following.

All responses collected are treated statistically and anonymously without identifying the respondents. Protection measures will be strictly exercised in handling the database prepared from the questionnaire responses to prevent information leakage. The data will only be used for the promotion of gender equality activities according to EPMEWSE established guidelines (http://www.djrenrakukai.org/doc_pdf/bylaw/enq3rd/enq_guideline141111.pdf). The copyright of the database along with analysis and tabulated results will belong to EPMEWSE. Additionally, if under prescribed procedures the committee decides it is appropriate, only the processed database (data

subjected to processing for making it difficult to identify specific individuals, corporations or other organizations) may be allowed for use other than by the committee.

Q1. Age as of April 1, 2016. **(Required)** [] **(Enter integer only)**

Q2. Gender. **(Required)** ☐ Male ☐ Female

Q3. What is your highest academic degree? **(Required)**

☐ Associate Degree ☐ Bachelor's ☐ Master's ☐ Doctor's ☐ Others

Q4. Do you hold a doctoral degree? If yes, how long have you had the degree? **(Required)**

Q4.1 ☐ No **(Go to Q5)** ☐ Yes (Course) ☐ Yes (Non-course) ☐ Yes (Both "Course" and "Non-course")

(Note: "Course" doctorates are conferred upon those who complete graduate school courses, whereas "non-course" doctorates do not require enrollment in the graduate school.)

Q4.2 ☐ 1-5 years ☐ 6-10 years ☐ 10-15 years ☐ 16 or more years

Q5. To which academic societies do you belong? **(Check all that apply) (Required)**

☐ Unassociated

☐ Japanese Society of Breeding

☐ The Genetics Society of Japan

☐ Japanese Society for Biological Sciences in Space

☐ The Japanese Society for Hygiene

☐ The Institute of Image Information and Television Engineers

☐ The Japanese Liquid Crystal Society

☐ The Japanese Society for Horticultural Science

☐ The Japan Society for Industrial and Applied Mathematics

☐ The Japan Society of Applied Physics

☐ The Japanese Association of Anatomists

☐ The Chemical Society of Japan

☐ The Society of Chemical Engineers, Japan

☐ The Japan Scientists' Association

☐ Japan Association for Fire Science and Engineering

☐ The Japan Society of Mechanical Engineers

☐ The Institution of Professional Engineers, Japan

☐ The Japanese Society of Fish Pathology

☐ The Ichthyological Society of Japan

☐ The Japan Institute of Metals and Materials

☐ The Society of Instrument and Control Engineers

☐ The Crystallographic Society of Japan

☐ Atomic Energy Society of Japan

☐ Architectural Institute of Japan

☐ The Society of Polymer Science, Japan

☐ Japan Society for Cell Biology

- ☐ Japan Society of Coordination Chemistry
- ☐ The Japanese Society of Sericultural Science
- ☐ Japanese Association for Oral Biology
- ☐ The Magnetics Society of Japan
- ☐ The Mass Spectrometry Society of Japan
- ☐ Society of Automotive Engineers of Japan
- ☐ The Japanese Geotechnical Society
- ☐ The Japanese Society of Veterinary Science
- ☐ The Society for the Study of Species Biology
- ☐ The Botanical Society of Japan
- ☐ The Japanese Society for Chemical Regulation of Plants
- ☐ Japanese Society for Plant Cell and Molecular Biology
- ☐ The Japanese Society of Plant Physiologists
- ☐ The Phytopathological Society of Japan
- ☐ The Society of Japanese Women Scientists
- ☐ Japanese Women Engineers Forum
- ☐ Society of Evolutionary Studies, Japan
- ☐ The Japan Neuroscience Society
- ☐ The Japanese Society for Neurochemistry
- ☐ The Japanese Forest Society
- ☐ The Japanese Society of Fisheries Science
- ☐ Japanese Society for Aquaculture Research
- ☐ The Mathematical Society of Japan
- ☐ Japan Society for Symbolic and Algebraic Computation
- ☐ The Japanese Biochemical Society
- ☐ The Ecological Society of Japan
- ☐ The Society of Eco-Engineering
- ☐ The Biophysical Society of Japan
- ☐ The Japan Society for Precision Engineering
- ☐ The Physiological Society of Japan
- ☐ The Japan Petroleum Institute
- ☐ The Ceramic Society of Japan
- ☐ Japan Society Histochemistry and Cytochemistry
- ☐ Japanese Society of Physical Fitness and Sports Medicine
- ☐ Protein Science Society of Japan
- ☐ Society of Geomagnetism and Earth, Planetary and Space Sciences
- ☐ Japan Geoscience Union
- ☐ Japanese Society of Animal Science
- ☐ The Japanese Society for Neutron Science
- ☐ The Ornithological Society of Japan
- ☐ The Database Society of Japan

- ☐The Iron and Steel Institute of Japan
- ☐The Electrochemical Society of Japan
- ☐The Institute of Electronics, Information and Communication Engineers
- ☐The Astronomical Society of Japan
- ☐The Japanese Society of Carbohydrate Research
- ☐The Zoological Society of Japan
- ☐Japan Society of Civil Engineers
- ☐Japanese Society of Tropical Medicine
- ☐Japan Society for Bioscience, Biotechnology, and Agrochemistry
- ☐Bioimaging Society
- ☐Japanese Society for Bioinformatics
- ☐The Japanese Society of Developmental Biologists
- ☐The Society for Reproduction & Development
- ☐The Japan Society for Comparative Endocrinology
- ☐The Surface Science Society of Japan
- ☐The Physical Society of Japan
- ☐The Japan Society of Plasma Science and Nuclear Fusion Research
- ☐The Molecular Biology Society of Japan
- ☐The Japan Society for Analytical Chemistry
- ☐The Japanese Society for Synchrotron Radiation Research
- ☐The Japan Wood Research Society
- ☐The Japanese Society of Health and Human Ecology
- ☐Association of Wildlife and Human Society
- ☐The Japan Society of Fluid Mechanics
- ☐Others ()

Q6. What is your current employment status? **(Required)**

- ☐Not working ☐Working ☐Student **(If student, answer Q6.2 and then go to Q7. Student)**

Q6.1 What is your area of specialization? Choose the closest one from the categories below (If you have left work, answer Q6.1 thru Q16 about your most recent occupation). **(Required)**

- ☐Mathematics ☐Electronics and Information ☐Physics ☐Chemical and Material Engineering ☐Life science and Biology ☐Civil Engineering ☐Mechanical Engineering ☐Earth and Planetary Science ☐Agriculture ☐Medicine, Dentistry and Pharmacology ☐Health and Nursing ☐Others

Q6.2 What type of organization are you affiliated with? (If affiliated with multiple organizations, check the primary one) **(Required)**

- ☐Corporation **(Go to Q7. Corporation)** ☐National university **(Go to Q7. University)**
☐Public university (municipal) **(Go to Q7. University)** ☐Private university **(Go to Q7. University)**
☐Technical College **(Go to Q7. University)** ☐Other educational institutions **(Go to Q7. University)**
☐Government **(Go to Q7. Corporation)** ☐Public research institution (including national research and development agencies) **(Go to Q7. Research Institution)** ☐Other research institution **(Go to Q7. Research Institution)** ☐Others **(Go to Q8)**

Q7. What is your current title (position)? **(Check all that apply) (Required)**

Corporation:

☐ General staff ☐ Group leader or equivalent ☐ Manager or equivalent ☐ Senior manager or equivalent ☐ General manager or equivalent ☐ Executive director and above or equivalent ☐ Others

University/Technical College:

☐ Researcher ☐ Research technician ☐ Research associate ☐ Assistant professor ☐ Lecturer
☐ Associate professor ☐ Professor ☐ Executive (Dean and above or equivalent) ☐ Others

Research Institution:

☐ Researcher ☐ Research technician ☐ Senior researcher ☐ Group lab chief ☐ Division head
☐ Director ☐ Others

Student:

☐ Associate degree student ☐ Graduate student (non-degree) ☐ Undergraduate student
☐ Graduate student (master's) ☐ Graduate student (doctoral) ☐ Research student ☐ Others

(If you are a student, go to Q17 regardless of choice)

Q8. Choose the category that best describes your current occupation. **(Required)**

☐ Research / Education ☐ Technical ☐ Sales ☐ Others

Q9. What is your annual salary including tax? [] JPY

Q10. What is your current employment status?

☐ Limited-term (Including appointed, part-time, postdoc, contract employee, temporary staff) **(Go to Q11)** ☐ No-term (Including regular employment, self-employment) **(Go to Q12)**

Q11. For those currently on limited-term employment, please answer the following.

Q11.1 How long is the term? [] years **(Enter integer only)**

Q11.2 Is it a tenure track employment? (After completing the term, you are allowed undergo review and switch to a no-term employment.) ☐ Yes ☐ No ☐ Unsure

Q11.3 Can employment be renewed? ☐ Yes ☐ No ☐ Only a limited number of times ☐ Unsure

Q11.4 How many years have you worked as a limited-term employee (exclude leave of absence and turnover periods)? [] years **(Enter integer only)**

Q11.5 How many times did your affiliation change during your limited-term employment (exclude reorganization)? [] number of times

Q11.6 What is your weekly contract-working hours? [] hours **(Enter integer only)**

Q11.7 Are you enrolled in your organization's health (or short-term mutual aid) and pension (or long-term mutual aid) plans? ☐ Yes ☐ No ☐ Health plan only ☐ Pension plan only ☐ Unsure

Q11.8 Are you allowed to take childcare leave? ☐ Yes ☐ No ☐ Unsure

Q11.9 After maternity/childcare leave, is your employment term extended according to the length of leave? ☐ Yes ☐ No ☐ Unsure

Q11.10 Would you like to be employed in a no-term job? ☐ Yes ☐ No ☐ Unsure **(Go to Q13 regardless of choice)**

Q12. For those currently on no-term employment, please answer the following.

Q12.1 How long have you been with your current job? [] years **(Enter integer only)**

Q12.2 How many total years did you spend as a limited-term employee before your current job (exclude leave of absence and turnover periods)? [] years **(Enter integer only)**

Q12.3 How many times did your affiliation change while you were on limited-term employment (exclude reorganization)? [] number of times

Q13. Have you ever changed jobs, relocated or left/lost a job? **(Check all that apply)**

- ☐ Changed workplace for new occupation **(Go to Q14)** ☐ Changed workplace without changing occupation **(Go to Q14)** ☐ Changed occupation without changing workplace **(Go to Q14)** ☐ Left/lost job **(Go to Q14)** ☐ Never **(Go to Q15)**

Q14. For those who have changed jobs, relocated or left/lost a job, please answer the following.

Q14.1 How many times have it occurred? [] times

Q14.2 What was (were) the reason(s)? **(Check all that apply)**

- ☐ Further my career ☐ Change in job content (or research topic) ☐ Better income
☐ Avoid relocation required by employer ☐ Job relocation of family member ☐ Workplace location
☐ End of contract ☐ Marriage ☐ Caring for children ☐ Caring for sick family member
☐ Concern for future ☐ Gender discrimination ☐ Difficulty with personal relations
☐ Unhappy with previous workplace ☐ Laid-off or dismissed ☐ Bankruptcy ☐ Others ()

Q15. Hours spent at your workplace.

Q15.1 How many hours per week do you spend at your workplace? [] hours **(Enter integer only)**

Q15.2 How many of the above hours are spent on R&D? ☐ Not applicable, [] hours **(Enter integer only)**

Q16. Hours spent working at home.

Q16.1 How many hours per week do you work at home? [] hours **(Enter integer only)**

Q16.2 How many of the above hours are spent on R&D? ☐ Not applicable, [] hours **(Enter integer only)**

Q17. Your future career path (If you left work, respond as you would have in your most recent occupation). In the future, what type of position do you wish to be in (If you wish to continue in your present position, please respond as such)? **(Check all that apply)**

- ☐ Work in an academic or research institution lab ☐ Leader of an academic or research institution lab
☐ Work in academic or research institution administration ☐ Academic or research institution work other than the above ☐ R&D work in private sector ☐ Leader of R&D in private sector ☐ Work in business management ☐ Other jobs in private sector ☐ Work in education ☐ Work in local government
☐ Be an entrepreneur ☐ Work as a science and technology journalist ☐ Unsure ☐ Others ()

Q18. Questions regarding overseas research activities and work

Q18.1 What do you think is the impact of overseas research activities and work on career development? ☐ Very positive ☐ Somewhat positive ☐ Both positive and negative ☐ Negative ☐ Unsure

Q18.2 Do you have overseas research activity and work experience lasting more than 6 months? ☐ Yes (with post in home country) ☐ Yes (without post in home country) ☐ None

Q19. Questions regarding postdoctoral positions and career development.

Q19.1 Compared to regular teachers and researchers, what do you think are the benefits of the

current postdoctoral positions? **(Check all that apply)**

- ☐ Can concentrate on research ☐ Opportunities to undertake new research ☐ Can take part in a large-scale project ☐ Job changes and re-employment is easier ☐ Easier to balance work and personal life ☐ No advantages ☐ Unsure ☐ Others ()

Q19.2 What do you think are the problems with the current postdoctoral positions? **(Check all that apply)**

- ☐ Outlook is difficult since term is affected by research funding ☐ Fixed term prevents work on large or consistent topic ☐ Few positions available after postdoctoral fellow ☐ Age limit ☐ Salary is low ☐ Significant salary gap depending on employment status ☐ Suffer loss of social security ☐ Difficult to receive childcare leave ☐ Forced to transfer away from family ☐ No problems ☐ Unsure ☐ Others ()

Q19.3 What do you think are the necessary approaches for ensuring career path after postdoctoral fellow? **(Check all that apply)**

- ☐ Expand full-time positions allowing independent research in academic and research institutions ☐ Establish full-time positions to allow continuation of research without going independent ☐ Eliminate postdoctoral fellow's age limit ☐ Eliminate age limit when hiring for academic and research institutions ☐ Provide opportunities to interact with other industries ☐ Expand professions involved with science and technology administration ☐ Employ mid-high teachers using special licensing ☐ Create and expand research administrator positions ☐ Establish a system to support entrepreneurship ☐ Education on science and society in graduate school ☐ Establish and expand career centers in academic and research institutions ☐ Support activities necessary for career development (participation in academic societies and training unrelated to the assigned project) ☐ Unsure ☐ Others ()

Q20. Are you married? ☐ Yes **(Go to Q21)** ☐ No **(Go to Q23)**

Q21. If you are married, please answer the following.

Q21.1 What is your spouse's occupation?

- ☐ Full-time homemaker **(Go to Q21.3)** ☐ Company employee (research/technical) ☐ Company employee (non-research/non-technical) ☐ Academic or research institution employee (research/technical) ☐ Academic or research institution employee (non-research/non-technical) ☐ Government employee ☐ Self-employed ☐ Student **(Go to Q21.3)** ☐ Others

Q21.2 Is that occupation limited-term? ☐ Limited-term (Including appointed, part-time, postdoc, contract employee, temporary staff) ☐ No-term (Including regular employment, self-employment)

Q21.3 Do you or your spouse have experience living separately from your family due to work or education? ☐ Yes **(Go to Q22)** ☐ No **(Go to Q23)**

Q22. For those with experience living separately, please answer the following.

Q22.1 How many total years total did you spend living separately? [] years **(Enter integer only)**

Q22.2 When faced with the circumstance of living separately, did you or your spouse consider relocating or switching jobs to avoid it? ☐ Consideration was made, and separation was resolved ☐ Consideration was made, but separation was not resolved ☐ Did not consider

Q23. Questions regarding programs that provide aid when spouse faces relocation.

Q23.1 Does your employer provide Dual Career Support Program? If yes, check those that closely match the available program. **(Check all that apply)** ☐ Relocation to commutable area ☐ Temporary leave ☐ No relocation for several years after marriage ☐ Others () ☐ No

support program ☐ Unsure

Q23.2 If your employer, the country or a public agency provides Dual Career Support Program, would you use the programs? ☐ Yes ☐ No (Reason(s) **(Check all that apply)** : ☐ Cannot relocate due to work matters ☐ Cannot relocate due to family matters ☐ Stability is highly questionable even after relocation ☐ Others() ☐ Unsure

Q24. Do you have children? ☐ Yes **(Go to Q25)** ☐ No **(Go to Q32)**

Q25. For those with children, please answer the following.

Q25.1 How many children do you have? []

Q25.2 What are their age groups? **(Check all that apply)** ☐ Pre-school ☐ Elementary school ☐ Middle school ☐ High school ☐ College ☐ Adult ☐ Others ()

Q25.3 Who was the primary caregiver (including secondary childcare) during working hours for your children before they entered elementary school? **(Check all that apply)**

☐ Self ☐ Spouse ☐ Family member living together ☐ Family member not living together/friend ☐ Day-care center ☐ Babysitter ☐ Others ()

Q25.4 When your children were in elementary school, who was the primary caregiver (including secondary childcare) after school hours? **(Check all that apply)**

☐ Not applicable ☐ Self ☐ Spouse ☐ Family member living together ☐ Family member not living together/friend ☐ After-school day-care center ☐ Sitter ☐ Cram school/enrichment lessons ☐ Left home alone ☐ Others ()

Q25.5 Who is the main caregiver when going on business trips or attending academic society functions? **(Check all that apply)**

☐ Not applicable ☐ Self ☐ Spouse ☐ Family member living together ☐ Family member not living together/friend ☐ Babysitter you hired ☐ Childcare service provided by academic society ☐ Others ()

Q26. Tell us about your childcare leave.

☐ Took leave as requested **(Go to Q27)** ☐ Took leave, but not as requested **(Go to Q27 then Q28)** ☐ Did not take leave **(Go to Q28)** ☐ Others () **(Go to Q29)**

Q27. For those who took childcare leave, please answer the following.

Q27.1 How long was the leave (average per child excluding maternity leave)? About [] week(s) or about [] month(s) **(Fill in one or the other) (Enter integer only)**

Q27.2 What was your working condition after returning from childcare leave?

☐ Returned to same duties ☐ Requested change of duties ☐ Requested change of department ☐ Assigned new duties ☐ Assigned to new department ☐ Promotion/advancement was delayed ☐ Lost job ☐ Retired ☐ Others **(If you took leave, but not as requested, go to Q28. If you took leave as requested, go to Q29)**

Q28. If childcare leave was not as requested or childcare leave was not taken, what was the reason?

(Check all that apply) ☐ Leave was unnecessary ☐ Did not wish to take leave ☐ Home environment ☐ Workplace environment ☐ No provision for leave existed ☐ Could not enter daycare as desired ☐ Others ()

Q29. Tell us about your spouse's childcare leave.

☐ Took leave as requested **(Go to Q30)** ☐ Took leave, but not as requested **(Go to Q30 then Q31)** ☐ Did not take leave **(Go to Q31)** ☐ Others () **(Go to Q32)**

Q30. For those whose spouse took childcare leave, please answer the following.

How long was the leave (average per child excluding maternity leave)?

About [] week(s) or about [] month(s) **(Fill in one or the other) (Enter integer only) (If spouse took leave, but not as requested, go to Q31. If spouse took leave as requested, go to Q32)**

Q31. If childcare leave was not as requested or childcare leave was not taken, what was the reason?

(Check all that apply) ☐ Leave was unnecessary ☐ Did not wish to take leave ☐ Home environment ☐ Workplace environment ☐ No provision for leave existed ☐ Could not enter daycare as desired ☐ Others ()

Q32. What do you think is the ideal number of children to have?

Q32.1 Ideal number: []

Q32.2 If the number of children you have (or plan to have) is less than ideal, what is the reason? **(Check all that apply)** ☐ Not applicable ☐ Financial ☐ Health ☐ Job stability ☐ Balance between career and childcare ☐ Spouse's cooperation in child caring ☐ Understanding of workplace ☐ Social environment for children to grow ☐ Others ()

Q33. Tell us about nursing care.

Q33.1 Do currently or in the past have a family member that require(d) nursing care? ☐ Yes ☐ No

Q33.2 Are you aware of nursing-care leave program? ☐ Yes **(Go to Q33.3)** ☐ No **(Go to Q34)** ☐ Unsure **(Go to Q34)**

Q33.3 If you answered yes above, does your or your spouse's workplace have a nursing-care leave program? ☐ Yes ☐ No ☐ Unsure

Q34. What do you think are required to maintain balance between work and child/nursing care? **(Check all that apply)**

【Awareness Reform】

☐ Changes in "work as center" concept ☐ Changes in awareness of male and female roles ☐ Workplace atmosphere ☐ Understanding from supervisor ☐ Relationship with child and nursing care service providers

【Program Reform】

☐ Shorter working hours ☐ Work support ☐ Variety of provisions for leave of absence ☐ Alternate staffing while on leave ☐ Provision for working at home while on leave ☐ Work sharing ☐ Flexible working hours ☐ Improve employment system ☐ Various ways of working and career paths

【Financial Support】

☐ Financial support for child and nursing care ☐ Public subsidies for employer of person on leave ☐ Financial support for long distance care (such as care allowance, transportation discount, etc.)

【Facility and Service Improvement】

☐ Expanded child-care facilities and services ☐ Sick child care ☐ Expanded after-school care for children ☐ Expanded nursing-care facilities and services (including home) ☐ Expanded municipal childrearing support ☐ Unsure ☐ Others ()

Q35. What sort of environment and opportunities are necessary for furthering R&D? **(Check all that apply)**

☐ Not applicable ☐ R&D time ☐ R&D assistant ☐ R&D funds (including maintenance) ☐ Joint researcher ☐ R&D freedom ☐ Streamline or separate administrative and odd jobs ☐ Opportunity to present results ☐ Understanding from supervisor ☐ Understanding from management ☐ Environment for long-term research ☐ Common purpose/communication within the research group ☐ Appropriate evaluation of the performance and capabilities ☐ Guidance from supervisors ☐ Opportunity to educate

students ☐ Expectations from the surrounding ☐ Others ()

Q36. Please answer the following.

Q36.1 Why do you think there are fewer women than men in science and technology fields? **(Check all that apply)**

☐ Educational environment ☐ Home environment ☐ Workplace environment ☐ Social bias ☐ Social division of labor between males and females ☐ Lack of role models ☐ Less hiring compared to males ☐ Lack of consideration for child and family care in performance evaluation ☐ Male-oriented mindset ☐ Difference in male and female abilities ☐ Difference in male and female qualifications ☐ Ratio of males is higher ☐ Research/technical work cannot be imagined ☐ Image of research/technical workplace is not good ☐ Outlook is uncertain ☐ Salary is low ☐ Working hour is long ☐ Achieving managerial position is difficult ☐ Balancing family and work is difficult ☐ Returning after child/nursing care leave is difficult ☐ Lack of information while a student ☐ Others ()

Q36.2 What do you think is (are) the reason(s) for the low proportion of women in leadership positions in science and technology fields? **(Check all that apply)**

☐ Balancing family and work is difficult ☐ Frequent early retirement or leave of absence ☐ Females do not seek promotion as much as males ☐ Lack of role models ☐ Lack of consideration for child and family care in performance evaluation ☐ Evaluators tend to give priority to males ☐ Difference in male and female abilities/qualifications ☐ Insufficient female performance ☐ Female supervisors not desired ☐ Female ratio is low for the generation currently in leadership position ☐ Others ()

Q36.3 Which of the following do you think is (are) necessary in improving the proportion of women in science and technology fields? **(Check all that apply)**

☐ Aggressive hiring ☐ Promotion to managerial positions ☐ Facilitate promotions/salary increases ☐ Increase R&D funds ☐ Employ research assistants ☐ Consideration of life events in performance evaluations ☐ Reduce non-research/non-primary workload ☐ Provide opportunities for domestic and overseas studies ☐ Increase opportunities to participate in conferences as speakers, chairs or organizers ☐ Increase opportunities for receiving awards ☐ Provide leadership training ☐ Others ()

Q37. Are you familiar with any of the following laws or basic plans? **(Check all that apply)**

☐ The Act on Promotion of Women's Participation and Advancement in the Workplace (Effective April 1, 2016)
☐ 5th Science and Technology Basic Plan (Approved January 2016)
☐ Fourth Basic Plan for Gender Equality (Approved December 2015)
☐ Excellent Young Researchers Program (March 2016)
☐ Do not know

Q38. Please answer regarding national policies and support programs currently underway for female researchers. Check the applicable boxes.

	Meaningful	Uncertain	Not meaningful	Unaware
(1) Restart Support after Childbirth/Childcare (Japan Society for the Promotion of Science)	☐	☐	☐	☐

RPD Program) (2006 -)				
(2) Science Course Selection Support for Middle and High School Females (2006 -)	☐	☐	☐	☐
(3) Initiative for Realizing Diversity in the Research Environment (Formerly Supporting Activities for Female Researchers) (2011 -)	☐	☐	☐	☐
(4) Childbirth and Childcare Consideration in Scientific Research Grants (Applications accepted several times per year/relaxation of age limit)	☐	☐	☐	☐
(5) JST Strategic Basic Research Programs' (PRESTO, CREST, etc.) measures for considering childbirth and child-caring (Research interruption / extension allowed, comeback support, etc.)	☐	☐	☐	☐
(6) Gender Equality Bureau of the Cabinet Office "Challenge Campaign – Science and Engineering Field Selection for Female Students"	☐	☐	☐	☐

Q39. Following questions are related to numerical target for employment of new female researchers specified in the Forth Basic Plan for Gender Equality and 5th Science and Technology Basic Plan. (Aiming at 25% for natural sciences (at an early date), and then aim for 30%. In particular, early achievement of 20% for science, 15% for engineering, and 30% for agriculture, and aiming to achieve 30% for medicine, dentistry, and pharmacology combined)

Q39.1 Are you aware of this numerical target? ☐ Well aware ☐ Somewhat aware ☐ Did not know

Q39.2 What do you think is the significance of adopting a numerical target?

☐ Meaningful ☐ Should be expanded and promoted ☐ Has room for improvement ☐ Not meaningful ☐ Will have adverse effect ☐ Uncertain ☐ Others ()

Q39.3 Is there a numerical target for employment of female researchers in your organization?

☐ Yes (Go to Q39.4) ☐ No (Go to Q39.5) ☐ Uncertain (Go to Q40)

Q39.4 If there is a numerical target, is it made public? ☐ Yes ☐ No ☐ Uncertain

Q39.5 If there is no numerical target, do you think it is necessary to set a target? ☐ Necessary ☐ Unnecessary ☐ Uncertain

Q40. Do you think the laws, basic plans and projects mentioned above, have helped progress gender equality in science and technology fields since the third questionnaire survey (November 2012)?

Q40.1 In your affiliated organization:

☐ Progressing gradually ☐ No change ☐ Progressing backwards ☐ Uncertain

Q40.2 In you affiliated academic society:

☐ Progressing gradually ☐ No change ☐ Progressing backwards ☐ Uncertain

Q40.3 In the world as a whole:

☐ Progressing gradually ☐ No change ☐ Progressing backwards ☐ Uncertain

Q40.4 Do you feel an increase in the number of female researchers/engineers around you and an improvement in their promotion and treatment?

☐ Progressing gradually ☐ No change ☐ Progressing backwards ☐ Uncertain

Q41. What do you think is required in the future to promote gender equality? (Check all that apply)

☐ Reform female awareness ☐ Reform male awareness ☐ Increase male participation in housework and childcare ☐ Separate surnames for married couples ☐ Improve work environment
☐ Give females priority during certain periods ☐ Eliminate various age limits ☐ Improve evaluation system ☐ Encourage supervisor understanding ☐ Expand types of working arrangements
☐ Expand support of child and nursing care ☐ Introduce fixed-term employment ☐ Improve fixed-term employment ☐ Eliminate fixed-term employment ☐ Form a female researchers network ☐ Comparative studies and policies to meet international standards ☐ Clarification of national policies ☐ Funding for policies ☐ Expanded promotion by national/local government or employers ☐ Expansion of social security system ☐ Others () ☐ Nothing required

Q42. Please feel free to describe, in 100 words or less, any opinions you have regarding gender equality in science and technology fields.

[]

This concludes the questionnaire. Thank you for your time and cooperation.

Appendix 2 The Data of Each Scientific Society Attended

Official Names (of societies)	Number of Respondents				Number of Members				Response Ratio
	Males	Females	Total	Female Ratio	Males	Females	Total	Female Ratio	
Japanese Society of Breeding	158	59	217	27. 20%	1297	273	1570	17. 40%	13. 80%
The Genetics Society of Japan	153	68	221	30. 80%	497	140	637	22. 00%	34. 70%
Japanese Society for Biological Sciences in Space	33	17	50	34. 00%	189	39	228	17. 10%	21. 90%
The Japanese Society for Hygiene	86	61	147	41. 50%	1095	497	1592	31. 20%	9. 20%
The Institute of Image Information and Television Engineers	45	5	50	10. 00%	2816	96	2912	3. 30%	1. 70%
The Japanese Liquid Crystal Society	18	5	23	21. 70%	674	69	743	9. 30%	3. 10%
The Japanese Society for Horticultural Science	233	84	317	26. 50%	1614	357	1971	18. 10%	16. 10%
The Japan Society for Industrial and Applied Mathematics	89	19	108	17. 60%	1496	80	1576	5. 10%	6. 90%
The Japan Society of Applied Physics	523	123	646	19. 00%	18975	1173	20148	5. 80%	3. 20%
The Japanese Association of Anatomists	151	77	228	33. 80%	1872	439	2311	19. 00%	9. 90%
The Chemical Society of Japan	958	257	1215	21. 20%	22378	3150	25528	12. 30%	4. 80%
The Society of Chemical Engineers, Japan	954	144	1098	13. 10%	6568	579	7147	8. 10%	15. 40%
The Japan Scientists' Association	53	12	65	18. 50%	3420	320	3740	8. 60%	1. 70%
Japan Association for Fire Science and Engineering	29	2	31	6. 50%	1181	46	1227	3. 70%	2. 50%
The Institution of Professional Engineers, Japan	666	42	708	5. 90%	18330	416	18746	2. 20%	3. 80%
The Japanese Society of Fish Pathology	42	3	45	6. 70%	320	32	352	9. 10%	12. 80%
The Ichthyological Society of Japan	144	17	161	10. 60%	1014	76	1090	7. 00%	14. 80%
The Japan Institute of Metals and Materials	112	44	156	28. 20%	4705	246	4951	5. 00%	3. 20%
The Society of Instrument and Control Engineers	97	13	110	11. 80%	5, 204	132	5336	2. 50%	2. 10%
The Crystallographic Society of Japan	140	28	168	16. 70%	881	141	1022	13. 80%	16. 40%
Atomic Energy Society of Japan	186	24	210	11. 40%	6855	317	7172	4. 40%	2. 90%
Architectural Institute of Japan	452	245	697	35. 20%	29097	5111	34208	14. 90%	2. 00%
The Society of Polymer Science, Japan	347	112	459	24. 40%	8424	1098	9522	11. 50%	4. 80%
Japan Society for Cell Biology	202	88	290	30. 30%	1000	264	1264	20. 90%	22. 90%
Japan Society of Coordination Chemistry	89	22	111	19. 80%	899	103	1002	10. 30%	11. 10%
The Japanese Society of Sericultural Science	19	6	25	24. 00%	352	64	416	15. 40%	6. 00%
Japanese Association for Oral Biology	85	67	152	44. 10%	1454	515	1969	26. 20%	7. 70%
The Magnetism Society of Japan	38	9	47	19. 10%			1866	0. 00%	2. 50%
The Mass Spectrometry Society of Japan	91	41	132	31. 10%	799	228	1027	22. 20%	12. 90%
Society of Automotive Engineers of Japan	75	10	85	11. 80%	47926	1011	48937	2. 10%	0. 20%
The Japanese Geotechnical Society	201	33	234	14. 10%	7776	343	8119	4. 20%	2. 90%
The Japanese Society of Veterinary Science	246	150	396	37. 90%	2612	778	3390	22. 90%	11. 70%
The Society for the Study of Species Biology	57	31	88	35. 20%	233	75	308	24. 40%	28. 60%
The Botanical Society of Japan	333	170	503	33. 80%	1230	449	1679	26. 70%	30. 00%
The Japanese Society for Chemical Regulation of Plants	92	29	121	24. 00%	381	74	455	16. 30%	26. 60%
Japanese Society for Plant Cell and Molecular Biology	150	66	216	30. 60%	684	167	851	19. 60%	25. 40%
The Japanese Society of Plant Physiologists	391	192	583	32. 90%	1679	486	2165	22. 40%	26. 90%
The Phytopathological Society of Japan	61	34	95	35. 80%	1416	395	1811	21. 80%	5. 20%
The Society of Japanese Women Scientists	2	88	90	97. 80%	2	292	294	99. 30%	30. 60%
Japanese Women Engineers Forum	1	21	22	95. 50%	10	161	171	94. 20%	12. 90%
Society of Evolutionary Studies, Japan	175	66	241	27. 40%	948	190	1138	16. 70%	21. 20%
The Japan Neuroscience Society	466	270	736	36. 70%	4386	1475	5861	25. 20%	12. 60%
The Japanese Society for Neurochemistry	95	62	157	39. 50%	931	247	1178	21. 00%	13. 30%
The Japanese Forest Society	157	72	229	31. 40%	1902	459	2361	19. 40%	9. 70%
The Japanese Society of Fisheries Science	689	116	805	14. 40%	2831	415	3246	12. 80%	24. 80%
Japanese Society for Aquaculture Research	149	7	156	4. 50%	631	18	649	2. 80%	24. 00%
The Mathematical Society of Japan	343	58	401	14. 50%	4668	349	5017	7. 00%	8. 00%
Japan Society for Symbolic and Algebraic Computation	25	4	29	13. 80%			340	0. 00%	8. 50%
The Japanese Biochemical Society	776	350	1126	31. 10%	5868	1615	7483	21. 60%	15. 00%
The Ecological Society of Japan	401	210	611	34. 40%	2932	938	3870	24. 20%	15. 80%
The Society of Eco-Engineering	42	13	55	23. 60%	270	26	296	8. 80%	18. 60%
The Biophysical Society of Japan	370	114	484	23. 60%	2553	450	3003	15. 00%	16. 10%

Appendix 2 The Data of Each Scientific Society Attended

Official Names (of societies)	Number of Respondents				Number of Members				Response Ratio
	Males	Females	Total	Female Ratio	Males	Females	Total	Female Ratio	
The Japan Society for Precision Engineering	51	10	61	16.40%	3978	116	4094	2.80%	1.50%
The Physiological Society of Japan	429	190	619	30.70%	1300	609	1909	31.90%	32.40%
The Japan Petroleum Institute	93	14	107	13.10%	3076	119	3195	3.70%	3.30%
The Ceramic Society of Japan	85	18	103	17.50%	4110	384	4494	8.50%	2.30%
Japan Society Histochemistry and Cytochemistry	35	20	55	36.40%	553	187	740	25.30%	7.40%
Japanese Society of Physical Fitness and Sports Medicine	158	93	251	37.10%	2953	983	3936	25.00%	6.40%
Protein Science Society of Japan	219	58	277	20.90%	1011	201	1212	16.60%	22.90%
Society of Geomagnetism and Earth, Planetary and Space Sciences	54	22	76	28.90%	667	82	749	10.90%	10.10%
Japan Geoscience Union	460	172	632	27.20%	7563	1777	9340	19.00%	6.80%
Japanese Society of Animal Science	171	59	230	25.70%	1328	302	1630	18.50%	14.10%
The Japanese Society for Neutron Science	65	7	72	9.70%	539	38	577	6.60%	12.50%
The Ornithological Society of Japan	84	28	112	25.00%	980	204	1184	17.20%	9.50%
The Database Society of Japan	21	10	31	32.30%	1860	203	2063	9.80%	1.50%
The Iron and Steel Institute of Japan	75	20	95	21.10%	8631	258	8889	2.90%	1.10%
The Electrochemical Society of Japan	124	26	150	17.30%	4640	110	4750	2.30%	3.20%
The Institute of Electronics, Information and Communication Engineers	649	115	764	15.10%	27844	1489	29333	5.10%	2.60%
The Astronomical Society of Japan	87	39	126	31.00%	1874	345	2219	15.50%	5.70%
The Japanese Society of Carbohydrate Research	110	57	167	34.10%	730	243	973	25.00%	17.20%
The Zoological Society of Japan	425	164	589	27.80%	1856	468	2324	20.10%	25.30%
Japan Society of Civil Engineers	331	79	410	19.30%	36351	1864	38215	4.90%	1.10%
Japanese Society of Tropical Medicine	30	24	54	44.40%	417	159	576	27.60%	9.40%
Japan Society for Bioscience, Biotechnology, and Agrochemistry	773	237	1010	23.50%	7419	2427	9846	24.60%	10.30%
Bioimaging Society	51	21	72	29.20%	274	47	321	14.60%	22.40%
Japanese Society for Bioinformatics	71	12	83	14.50%	424	47	471	10.00%	17.60%
Japanese Society of Developmental Biologists	200	108	308	35.10%	881	274	1155	23.70%	26.70%
The Society for Reproduction and Development	90	46	136	33.80%	604	202	806	25.10%	16.90%
The Japan Society for Comparative Endocrinology	106	25	131	19.10%	344	73	417	17.50%	31.40%
The Surface Science Society of Japan	85	24	109	22.00%	1550	154	1704	9.00%	6.40%
The Physical Society of Japan	1120	199	1319	15.10%	15563	981	16544	5.90%	8.00%
The Japan Society of Plasma Science and Nuclear Fusion Research	93	10	103	9.70%	1425	47	1472	3.20%	7.00%
The Molecular Biology Society of Japan	1209	579	1788	32.40%	9656	3327	12983	25.60%	13.80%
The Japan Society for Analytical Chemistry	222	80	302	26.50%	4271	856	5127	16.70%	5.90%
The Japanese Society for Synchrotron Radiation Research	183	29	212	13.70%	871	82	953	8.60%	22.20%
The Japan Wood Research Society	148	45	193	23.30%	1366	327	1693	19.30%	11.40%
The Japanese Society of Health and Human Ecology	13	12	25	48.00%	272	394	666	59.20%	3.80%
Association of Wildlife and Human Society	28	15	43	34.90%	360	116	476	24.40%	9.00%
The Japan Society of Fluid Mechanics	85	15	100	15.00%	1239	42	1281	3.30%	7.80%
Unassociated	792	476	1268	37.50%					
Others	3235	1513	4748	31.90%					
Total	24312	8601	32913	26.10%					

Note: The number of society members were obtained from EPMEWSE's study of "Female Ratio of the Affiliated Societies in 2017."

[https://www.djrenrakukai.org/doc_pdf/2017_ratio/2017_ratio_table_eng.pdf]