Introduction

National Institute of Informatics(**NII**) conducts an "Academic Research Activities Survey" in order to collect information for the "Directory of Researchers," a database on the research activities of scholars. This survey was conducted from 1961 onward by the Ministry of Education, Science, Sports, and Culture, and in 1992 this function was taken over by NACSIS (National Center for Science Information Systems). And in 2000 it was taken over by NII with reorganization of NACSIS.

From the 2002 fiscal year, it was succeeded as part of the "Directory Database of Research and Development Activities" (ReaD) investigation which Japan Science and Technology Agency conducts. It is possible that it offers the survey result in the "Directory Database of Research and Development Activities" (ReaD) and knows detailed information on researchers such as the domestic university.

The survey for fiscal 2004 covers 1,407 institutions engaged in academic research, and some 165,927 scholars affiliated with 1,344 institutions engaged in academic research supplied most of the replies.

The present report is a statistical compilation of the survey data for fiscal 2004 prepared in order to provide a quantitative understanding of academic research activities in Japan. This is the eighth quantitative analysis of the "Academic Research Activities Survey." The seven previous reports covered as following:

- the survey for fiscal 1977 (published by the Ministry of Education, Science, Sports, and Culture in 1980)
- the survey for fiscal 1993 (published in 1996: "Statistical Survey on the State of Research Activities in 1993 –," Journal of Information Processing and Management 39 (7) (1996))
- the survey for fiscal 1995 (published in 1997: "Statistical Survey on the State of Research Activities in 1995 –," Journal of Information Processing and Management 40 (7) (1997))
- the survey for fiscal 1996 (published by NACSIS in 1998: "Academic Research Activities in Japan – A Report on the 1996 Academic Research Activities Survey –")
- the survey for fiscal 1997 (published by NACSIS in 1999: " Academic Research Activities in Japan – A Report on the 1997 Academic Research Activities Survey –")
- the survey for fiscal 1998 (published by NACSIS in 2000: " Academic Research Activities in Japan – A Report on the 1998 Academic Research Activities Survey –")
- the survey for fiscal 1999 (published by NII in 2001: " Academic Research Activities in Japan – A Report on the 1999 Academic Research Activities Survey –").

- the survey for fiscal 2000 (published by NII in 2002: " Academic Research Activities in Japan – A Report on the 2000 Academic Research Activities Survey –").
- the survey for fiscal 2001 (published by NII in 2003: " Academic Research Activities in Japan – A Report on the 2001 Academic Research Activities Survey –").
- the survey for fiscal 2002 (published by NII in 2004: " Academic Research Activities in Japan – A Report on the 2002 Academic Research Activities Survey –").
- the survey for fiscal 2003 (published by NII in 2005: " Academic Research Activities in Japan – A Report on the 2003 Academic Research Activities Survey –").

Like its predecessors, this report is organized so as to make it as easy as possible to compare the data it contains with the data presented in the past reports prepared by the Ministry of Education, Science, Sports, and Culture.

It is our hope that this report will enable readers to gain an understanding of overall trends in academic research activities in Japan.

1. Overview of Survey Results

This survey covers the following researchers affiliated with the institutions listed below as of December, 2004: full-time faculty and researchers employed in positions equivalent to university associate professor or above, graduates enrolled in university doctorate (post-MA) programs, special researchers affiliated with the Japan Society for the Promotion of Science, research associates affiliated with the Japan Society for the Promotion of Science, and part-time researchers at universities, etc.

(1) National, municipal, and private universities
(2) National, municipal, and private junior colleges
(3) National, municipal, and private colleges of technology
(4) Inter-university research institutes, the National Center for University Entrance Examination, national institutions for academic degrees, the Center for National University Finance (referred to below as "inter-university research institutes, etc.")
(5) The Ministry of Education, Science, Sports, and Culture, the Agency of Cultural Affairs, and institutions and facilities affiliated with them (referred to below as "government research institutes of the Ministry of Education, Science, Sports, and Culture")
(6) Private scientific research institutes of the Ministry of Education, Science, Sports, and Culture (referred to below as "private scientific research institutes")

In total, there were 1,407 institutions subject to the survey, and valid responses were received from 1,344 institutions (95.5% response rate) and 165,927 persons (Table 1).

In the followings the situation on the research activities of the persons responding to the survey (referred to as "researchers" in the discussion below) are described.

Table 1　Persons Surveyed and Number of Responses

Professional Title	Persons Surveyed	Responses		Response rate
	Institutions	Institutions	Persons	Institutions
Universities	687	702	149,299	102.2%
Junior Colleges	483	459	9,418	95.0%
Colleges of Technology	63	63	4,063	100.0%
Inter-university Research Institutes	4	9	1,511	225.0%
Government Research Institutes	27	19	798	70.4%
Private Scientific Research Institutes	143	92	838	64.3%
Total	1,407	1,344	165,927	95.5%

2. Background of Academic Researchers

2.1 Number of Researchers by Field of Specialization

Table 2 shows the number of researchers broken down by field of specialization. The fields of specialization categories used in the survey are research field codes based on the "Classification Table for Scientific Research Subsidies". A view of the percentages of the total accounted for by the various fields of specialization (Figure 1) shows that arts (12.2%) and medicine (11.6%) have the largest shares, together accounting for 23.8% of the total. These fields are followed, in descending order, by engineering (7.9%), interdisciplinary area (7.8%), science (5.1%), economics (3.2%), agriculture (2.5%), law (1.7%), and wide area (1.4%). Also, the ratio of researchers in the humanities and social sciences (researchers in arts, law, and economics), total 28,304 persons, to researchers in the natural sciences (researchers in science, engineering, agriculture, and medicine), total 45,050 persons, is 39:61.

A breakdown of researchers by the governing authority of the institutions they are affiliated with shows that 45.6% (76,096 persons) are at national institutions, 6.6% (10,930 persons) are at municipal institutions, and 47.6% (78,901 persons) are at private institutions.

Figure 2 shows the composition of researchers broken down by field of specialization and by institution governing authority. The proportion of researchers in the natural sciences affiliated with national institutions is high, especially in the cases of science (66.6%), agriculture (62.0%) and engineering (61.7%). In contrast, a high proportion of researchers in the humanities and social sciences are affiliated with private institutions, such as economics (72.8%), law (68.0%), arts (66.3%), and wide area (61.9%).

Table 2　Number of Researchers by Institution Type / by Field of Specialization

Institution Type			Arts	Law	Economics	Science	Engineering	Agriculture	Medicine	Interdisciplinary Area	Wide Area	Unknown	Total	Institutions
Universities	National	Assistant and Above	4,457	676	953	4,375	5,844	2,140	6,914	4,804	645	17,413	48,221	
		Others	658	74	105	709	958	409	1,053	658	46	17,071	21,741	
		Total	5,115	750	1,058	5,084	6,802	2,549	7,967	5,462	691	34,484	69,962	88
	Municipal	Assistant and Above	905	125	310	419	524	238	1,594	610	98	2,945	7,768	
		Others	39	4	5	15	14	19	93	20	1	1,662	1,872	
		Total	944	129	315	434	538	257	1,687	630	99	4,607	9,640	76
	Private	Assistant and Above	10,696	1,772	3,439	2,121	3,907	943	8,258	4,618	1,037	19,211	56,002	
		Others	419	91	119	67	116	45	598	153	89	11,998	13,695	
		Total	11,115	1,863	3,558	2,188	4,023	988	8,856	4,771	1,126	31,209	69,697	523
	Total	Assistant and Above	16,058	2,573	4,702	6,915	10,275	3,321	16,766	10,032	1,780	39,569	111,991	
		Others	1,116	169	229	791	1,088	473	1,744	831	136	30,731	37,308	
		Total	17,174	2,742	4,931	7,706	11,363	3,794	18,510	10,863	1,916	70,300	149,299	687
Junior Colleges	National	Assistant and Above	20	1	4	0	11	1	17	27	12	33	126	
		Others	0	0	0	0	0	0	0	0	0	38	38	
		Total	20	1	4	0	11	1	17	27	12	71	164	5
	Municipal	Assistant and Above	171	10	37	13	23	72	159	101	14	290	890	
		Others	1	0	0	1	1	0	1	2	0	123	129	
		Total	172	10	37	14	24	72	160	103	14	413	1,019	44
	Private	Assistant and Above	2,160	73	271	136	247	217	439	1,192	245	2,737	7,717	
		Others	18	0	1	1	1	1	5	8	2	481	518	
		Total	2,178	73	272	137	248	218	444	1,200	247	3,218	8,235	434
	Total	Assistant and Above	2,351	84	312	149	281	290	615	1,320	271	3,060	8,733	
		Others	19	0	1	2	2	1	6	10	2	642	685	
		Total	2,370	84	313	151	283	291	621	1,330	273	3,702	9,418	483
Colleges of Technology	National	Assistant and Above	272	18	20	287	1,134	27	11	354	18	1,400	3,541	
		Others	5	0	0	1	20	0	0	1	1	92	120	
		Total	277	18	20	288	1,154	27	11	355	19	1,492	3,661	55
	Municipal	Assistant and Above	26	1	1	34	101	1	1	22	2	79	268	
		Others	0	0	0	0	1	0	0	0	0	2	3	
		Total	26	1	1	34	102	1	1	22	2	81	271	5
	Private	Assistant and Above	8	0	1	8	26	1	0	16	6	62	128	
		Others	0	0	0	0	0	0	0	0	0	3	3	
		Total	8	0	1	8	26	1	0	16	6	65	131	3
	Total	Assistant and Above	306	19	22	329	1,261	29	12	392	26	1,541	3,937	
		Others	5	0	0	1	21	0	0	1	1	97	126	
		Total	311	19	22	330	1,282	29	12	393	27	1,638	4,063	63
Inter-University Research Institutes		Assistant and Above	81	4	2	218	51	7	14	186	10	389	962	
		Others	6	1	0	19	3	3	0	12	2	503	549	
		Total	87	5	2	237	54	10	14	198	12	892	1,511	4
Government Research Institutes		Assistant and Above	146	1	1	67	41	4	3	42	6	307	618	
		Others	4	0	0	2	3	0	0	3	0	168	180	
		Total	150	1	1	69	44	4	3	45	6	475	798	27
Private Scientific Research Institutes		Assistant and Above	68	6	16	34	44	48	107	69	9	282	683	
		Others	2	0	0	3	4	2	1	5	0	138	155	
		Total	70	6	16	37	48	50	108	74	9	420	838	143
Total	National	Assistant and Above	4,976	700	980	4,947	7,081	2,179	6,959	5,413	691	19,542	53,468	
		Others	673	75	105	731	984	412	1,053	674	49	17,872	22,628	
		Total	5,649	775	1,085	5,678	8,065	2,591	8,012	6,087	740	37,414	76,096	179
	Municipal	Assistant and Above	1,102	136	348	466	648	311	1,754	733	114	3,314	8,926	
		Others	40	4	5	16	16	19	94	22	1	1,787	2,004	
		Total	1,142	140	353	482	664	330	1,848	755	115	5,101	10,930	125
	Private	Assistant and Above	12,932	1,851	3,727	2,299	4,224	1,209	8,804	5,895	1,297	22,292	64,530	
		Others	439	91	120	71	121	48	604	166	91	12,620	14,371	
		Total	13,371	1,942	3,847	2,370	4,345	1,257	9,408	6,061	1,388	34,912	78,901	1,103
	Total	Assistant and Above	19,010	2,687	5,055	7,712	11,953	3,699	17,517	12,041	2,102	45,148	126,924	
		Others	1,152	170	230	818	1,121	479	1,751	862	141	32,279	39,003	
		Total	20,162	2,857	5,285	8,530	13,074	4,178	19,268	12,903	2,243	77,427	165,927	1,407

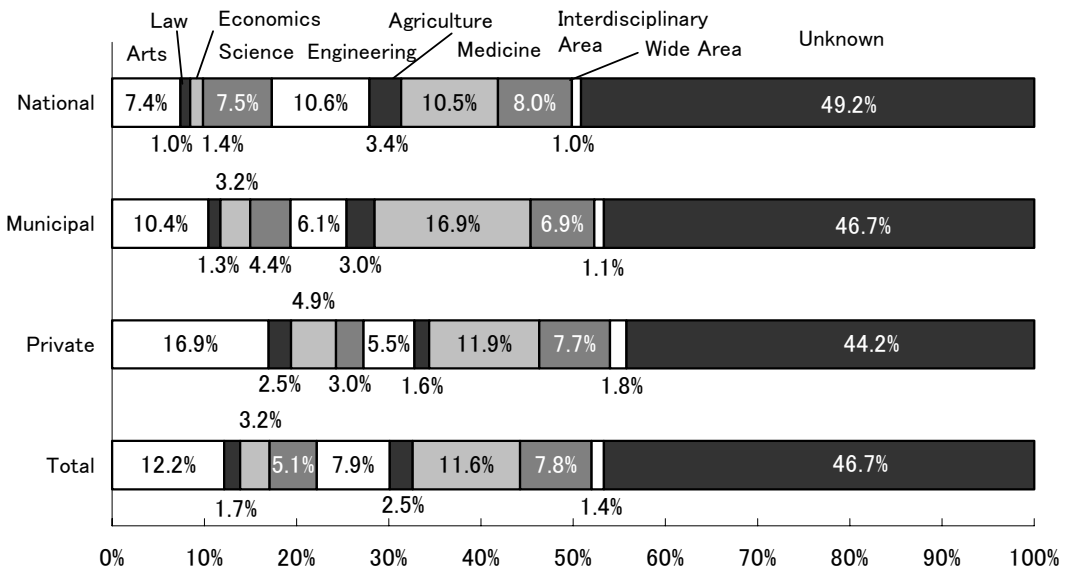

Figure 1　Composition of Researchers by Institution Governing Authority / by Field of Specialization

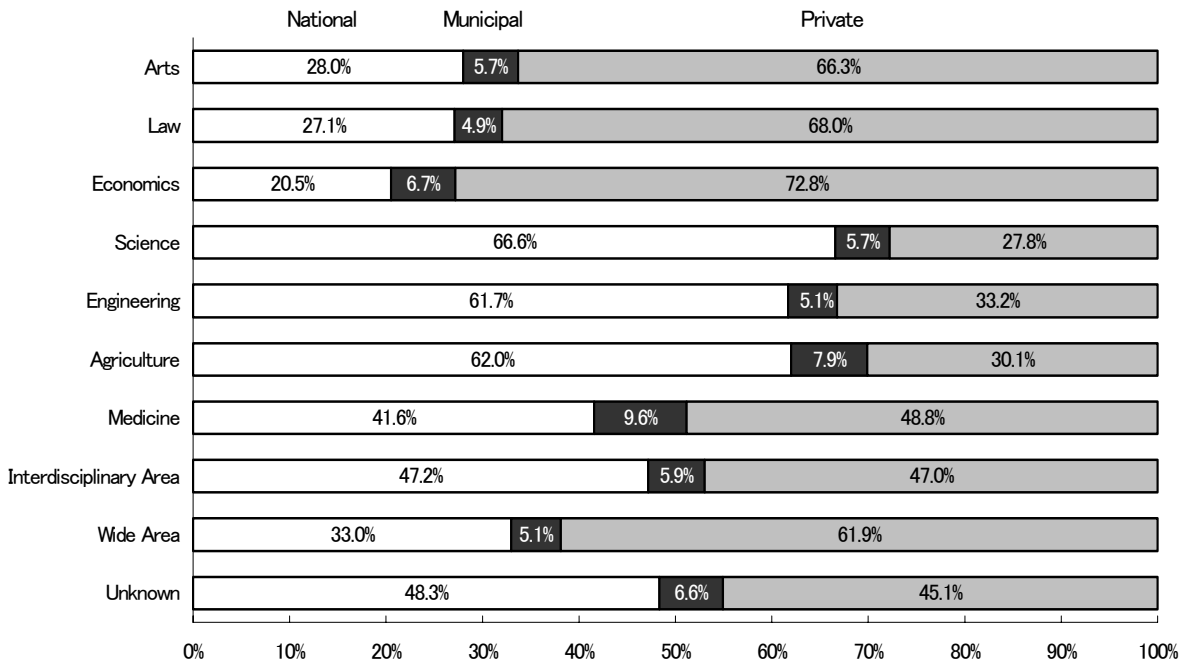

Figure 2　Composition of Researchers by Field of Specialization / by Institution Governing Authority

2.2 Number of Researchers by Institution Type

Broken down by institution type, the proportion of researchers affiliated with universities account for 90.0% of the total (149,299 persons), those affiliated with junior colleges for 5.7% (9,418 persons), those affiliated with colleges of technology for 2.4% (4,063 persons), those affiliated with inter-university research institutes for 0.9% (1,511 persons), those affiliated with private scientific research institutes for 0.5% (838 persons), and those affiliated with government research institutes of the Ministry of Education, Science, Sports, and Culture for 0.5% (798 persons).

The proportions of researchers at universities, junior colleges, and colleges of technology broken down by institution governing authority are shown in Table 2. The composition for universities is national 46.9%, municipal 6.5%, and private 46.7%; that for junior colleges is national 1.7%, municipal 10.8%, and private 87.4%; and that for colleges of technology is national 90.1%, municipal 6.7%, and private 3.2%.

Table 3 lists the composition of researchers by professional title at universities and junior colleges. The proportion of professors and lecturers at private institutions is higher than at national and municipal institutions, while the proportion of research assistants, and graduate students enrolled in university doctorate (post-MA) programs (referred to as "university graduate students" below) is higher at national and municipal institutions than at private institutions.

Table 3 Composition of Researchers by Professional Title at Universities and Junior Colleges

Professional Title		Total	National	Municipal	Private
Universities	President / Vice President	0.3%	0.2%	0.3%	0.4%
	Professor	31.3%	25.2%	27.5%	37.9%
	Associate Professor	19.6%	20.6%	20.9%	18.3%
	Lecturer	9.1%	5.4%	12.1%	12.5%
	Research Assistant	13.5%	16.4%	18.3%	9.8%
	Others	1.3%	1.1%	1.4%	1.5%
	Graduate Student	9.1%	13.8%	5.2%	4.9%
	Part-time Researcher	0.6%	1.2%	0.2%	0.1%
	Unknown	15.2%	16.0%	14.0%	14.6%
	Total	100.0%	100.0%	100.0%	100.0%
Junior Colleges	President / Vice President	1.4%	1.8%	1.3%	1.4%
	Professor	37.4%	32.3%	30.0%	38.4%
	Associate Professor	27.0%	23.2%	28.2%	26.9%
	Lecturer	20.5%	5.5%	16.5%	21.3%
	Research Assistant	5.6%	14.0%	11.3%	4.7%
	Others	0.9%	0.0%	0.1%	1.0%
	Graduate Student	0.1%	0.0%	0.2%	0.1%
	Part-time Researcher	7.2%	23.2%	12.5%	6.2%
	Unknown	0.0%	0.0%	0.0%	0.0%
	Total	100.0%	100.0%	100.0%	100.0%

2.3 Age

The average age of all the researchers is 47.3. Broken down by field of specialization, the average age is highest in wide area (51.8), followed in descending order by economics (51.7), arts (51.5), and law (50.3). Generally speaking, the average age was higher among researchers in the humanities and social sciences. The average age in other fields was as follows: engineering (48.8), agriculture (48.6), interdisciplinary area (48.6), and science (48.3). The field with the lowest average age was medicine, at 46.6. When the above are broken down by institution governing authority, in each case the average age of researchers at private institutions is higher that of researchers at national and municipal institutions (Figure 3). Also, the average age among men is 47.95 and that among women is 44.55 (Figure 4).

Broken down by institution type, the average age of researchers at inter-university research institutes is the lowest at 44.8. This was followed, in ascending order, by government research institutes of the Ministry of Education, Science, Sports, and Culture; colleges of technology; universities; and private scientific research institutes. The average age of researchers is highest (51.5) at junior colleges.

The average age of researchers broken down by professional title is as follows for research assistants and above: the average age among professors is 57.4, among whom that among professors at inter-university research institutes is the lowest, at 54.4, and that among professors at private scientific research institutes is the highest, at 68.5. Overall, the average age of associate professors is 46.5, that of lecturers 42.7, and that of research assistant 38.4. Among university professors, associate professors, and lecturers the highest average ages are found among those affiliated with private institutions, followed in descending order by municipal and national institutions. However, among institutes research assistant the order is reversed, with those affiliated with private institutions being the youngest, on average. Incidentally, the average age of university presidents is 63.8 at national institutions, 66.2 at municipal institutions, and 67.3 at private institutions. Also, the average age among special researchers affiliated with the Japan Society for the Promotion of Science, research assistants affiliated with the Japan Society for the Promotion of Science, and part-time researchers at universities, etc. (referred to as "part-time researchers" below) is 32.5 (Table 4).

The age composition of researchers overall is as follows: those aged 41 to 50 are the largest group, at 27.0% of the total; they are followed by the 51 to 60 group (26.5%), the 31 to 40 group (23.3%), the 61 to 70 group (14.0%), the 30 and below group (8.0%), and the 71 and above group (1.1%).

The breakdown by field of specialization, the percentage of researchers who are 40 or younger is large include engineering (29.3%), medicine (28.8%), agriculture (28.8%). In contrast, fields of specialization where the percentage of researchers who are 40 or younger is small include arts (16.9%), wide area (18.0%), economics (19.5%) (Figure 5). Generally speaking this shows that the proportion of younger researchers is lower in the humanities and social sciences than in the natural sciences.

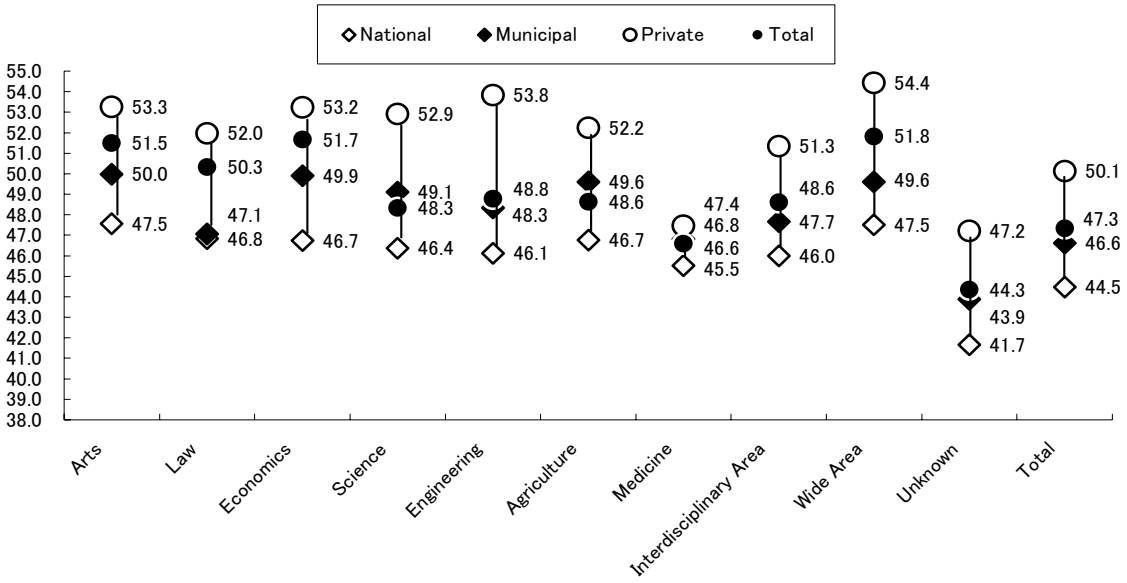

Figure 3　Average Age of Researchers by Field of Specialization

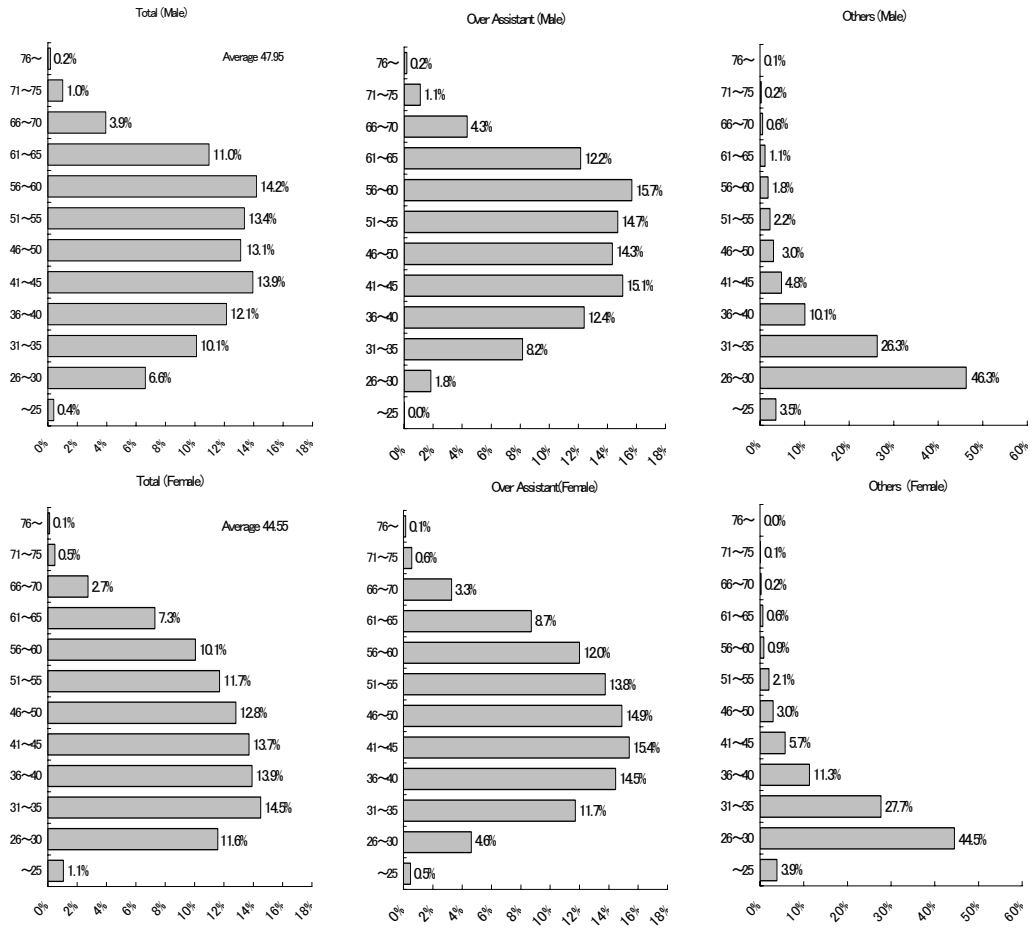

Figure 4　Age Composition of Researchers by Gender

Table 4　Average Age of Researchers by Institution Type / by Professional Title

Institution Type		Professional Title (in Universities)						Total
		Professor	Associate Professor	Lecturer	Research Assistant	President	Part-time Researcher	
Universities	National	55.6	45.1	42.5	38.9	63.9	31.8	44.3
	Municipal	56.3	46.3	42.6	38.3	65.0	38.1	46.4
	Private	58.7	47.8	43.0	38.1	67.3	37.2	49.9
	Total	57.4	46.4	42.8	38.6	66.3	32.4	47.1
Junior Colleges	National	56.9	49.3	42.1	34.0	58.5		49.4
	Municipal	57.1	47.0	41.8	37.9	68.5		48.6
	Private	59.1	50.0	43.4	36.1	67.2		51.9
	Total	58.9	49.6	43.3	36.4	67.2		51.5
Colleges of Technology	National	55.7	43.7	36.1	35.0	64.3	36.0	46.8
	Municipal	56.0	40.7	34.4	32.0			47.4
	Private	57.4	49.8	39.9	28.6	64.0		49.0
	Total	55.8	43.7	36.2	34.9	64.3	36.0	46.9
Inter-University Research Institutes		54.4	45.6	34.0	38.1		33.2	44.8
Government Research Institutes		56.1	43.4		36.3		41.0	46.1
Private Scientific Research Institutes		68.5	51.0	56.7	40.3		36.5	48.9
Total	National	55.6	45.0	41.9	38.7	63.8	31.9	44.5
	Municipal	56.3	46.2	42.3	38.3	66.2	38.1	46.6
	Private	58.7	48.2	43.1	37.9	67.3	37.1	50.1
	Total	57.4	46.5	42.7	38.4	66.5	32.5	47.3

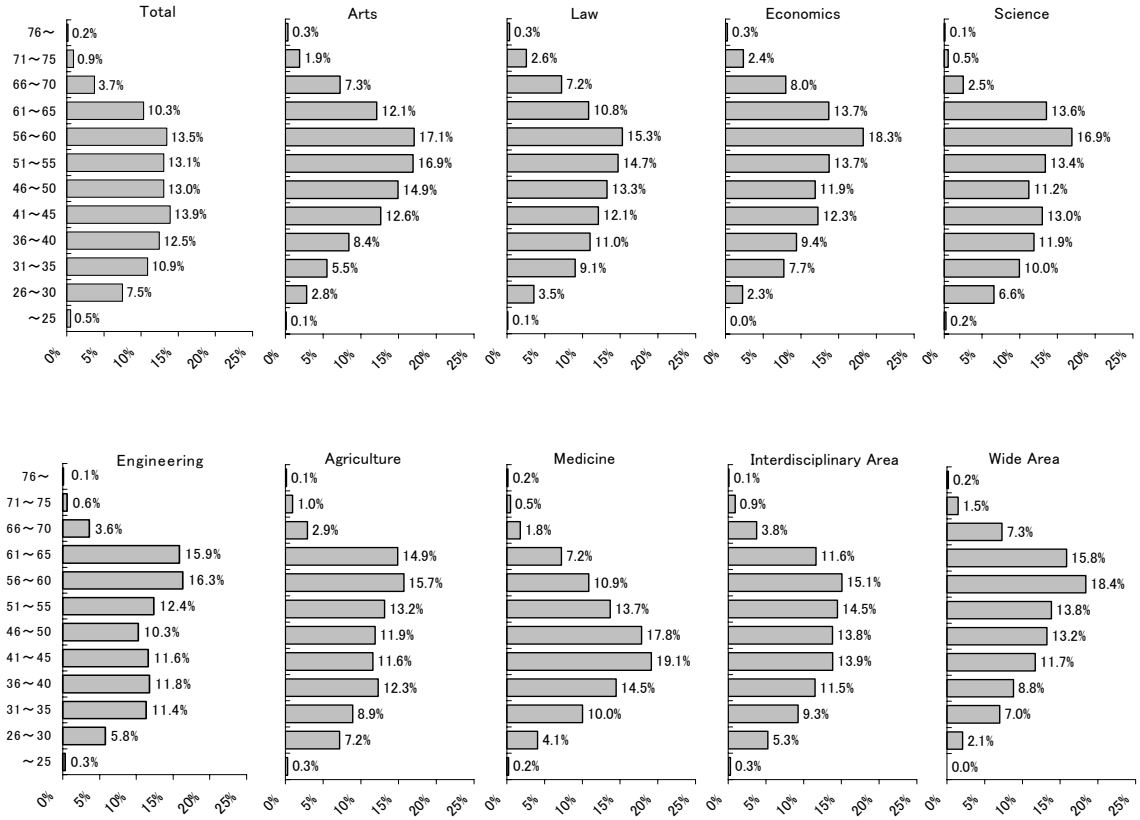

Figure 5　Age Composition of Researchers by Field of Specialization

2.4 Gender

Among all the researchers, 82.7% (116,284 persons) are men and 17.3% (24,252 persons) are women.

Broken down by field of specialization, the proportion of women is relatively high in four fields: arts (25.9%), wide area (22.0%), medicine (20.3%), and interdisciplinary area (19.9%). In contrast, the proportion of women is low in the fields of engineering (3.4%), science (6.3%), economics (8.0%), agriculture (10.2%), and law (12.1%). The very low proportion of women in the field of engineering is particularly noteworthy (Figure 6).

Broken down by institution type, the proportion of women is notably high at junior colleges where they account for 43.8% of the total among all institution governing authority classifications. In contrast, the proportion of women is extremely low at colleges of technology, only accounting for 4.8% among all institution governing authority classifications. Also, broken down by institution governing authority, the proportion of women is low at national institutions, while it is slightly under 60% of municipal and private institutions (Figure 7).

Broken down by professional title, the proportion of women is higher among research lecturers, assistants, university graduates, and part-time researchers for all institution governing authority classifications (Figure 8).

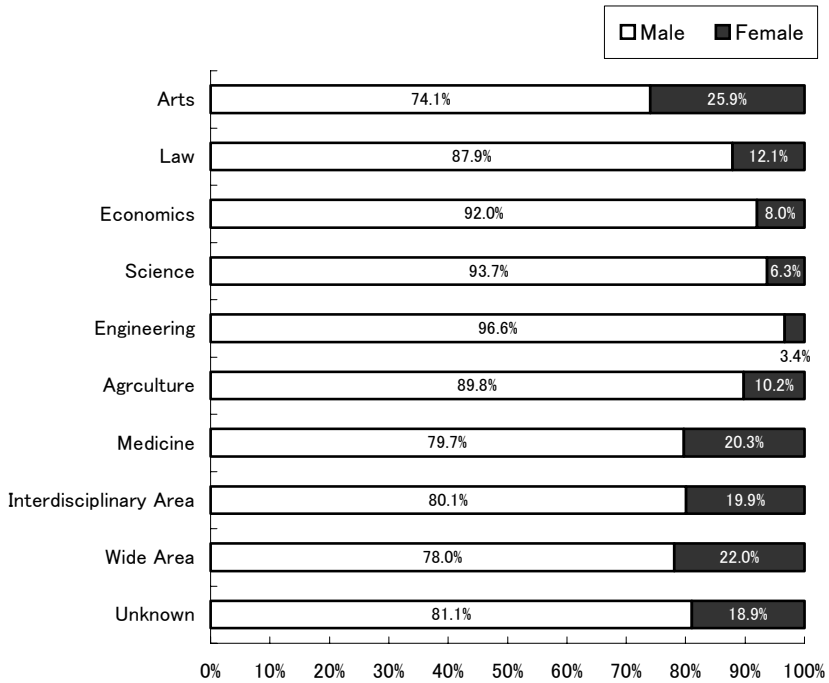

Figure 6 Gender Composition of Researchers by Field of Specialization

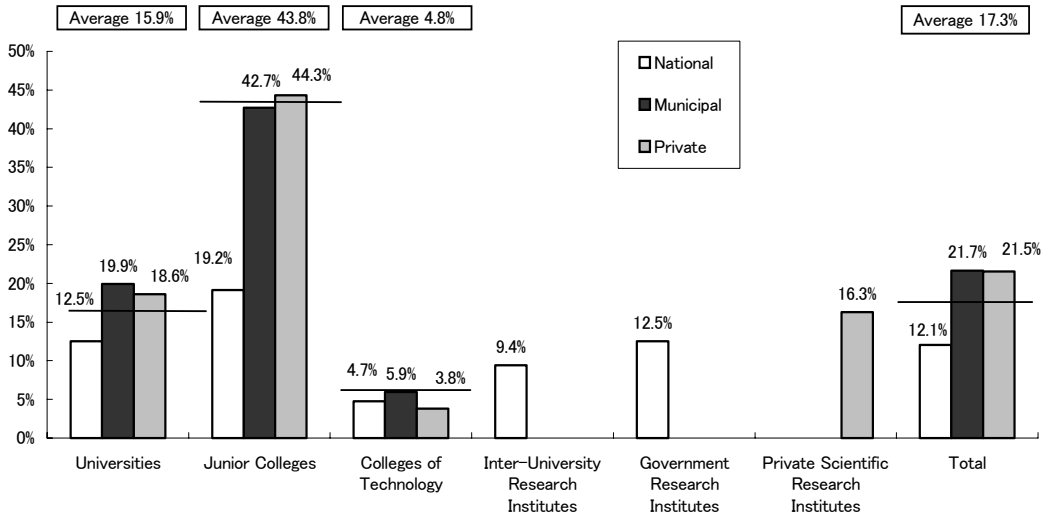

Figure 7　Ratio of Female Researchers by Institution Type

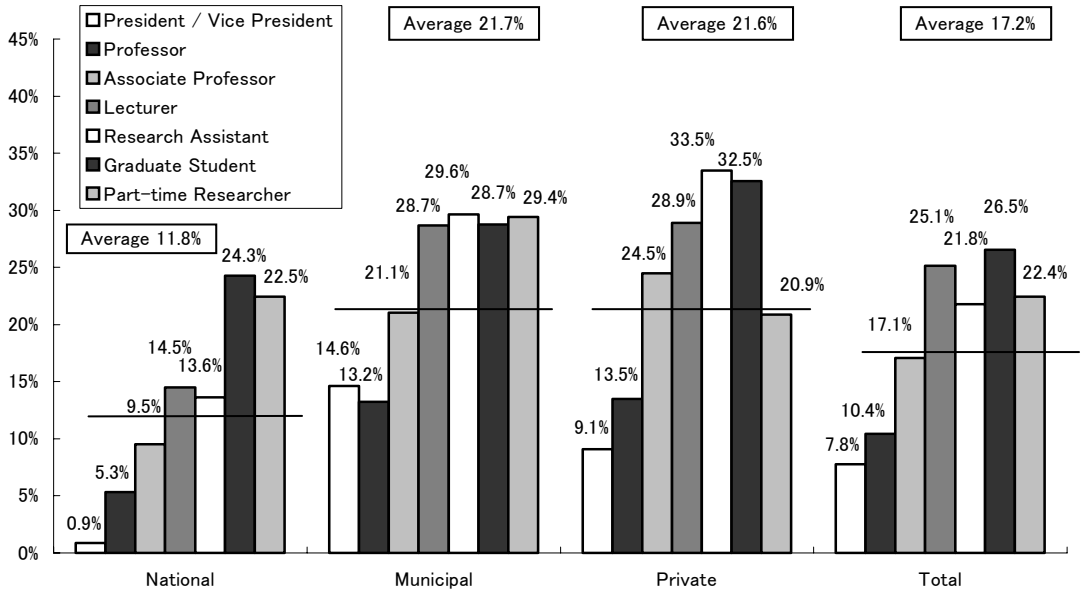

Figure 8　Ratio of Female Researchers by Professional Title

2.5 Non-Japanese Names

Of all the researchers, 3,757 or 2.3% have non-Japanese names.

An examination of the percentages of researchers with non-Japanese names in the various fields of specialization shows that their proportions are largest in the fields of arts (3.9%), economics (3.0%), wide area (2.6%), followed by and engineering (2.5%), agriculture (2.3%), and law (2.1%) (Figure 9). Note that the 788 researchers with non-Japanese names in the field of arts account for 21.0% of the total number of researchers with non-Japanese names.

The proportions of researchers with non-Japanese names broken down by institution type are highest at universities, followed by junior colleges and private scientific research institutes in descending order. (Figure 10).

Broken down by professional title and for institutions of all types, the proportion of researchers with non-Japanese names is highest among university graduates and part-time researchers. Together, these two categories account for 13.2% of the total for institutions of all types. Among research assistants and above, the proportion of researchers with non-Japanese names is lowest at private institutions and rises at municipal and national institutions, in that order. (Figure 11).

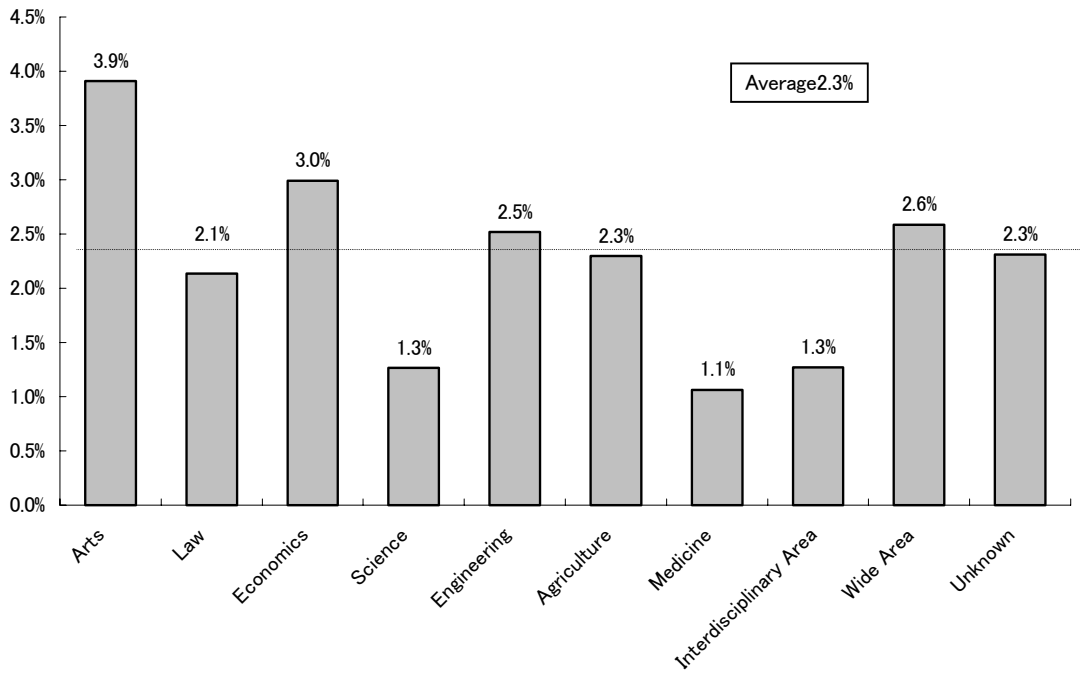

Figure 9　Ratio of Researchers with Non-Japanese Names by Field of Specialization

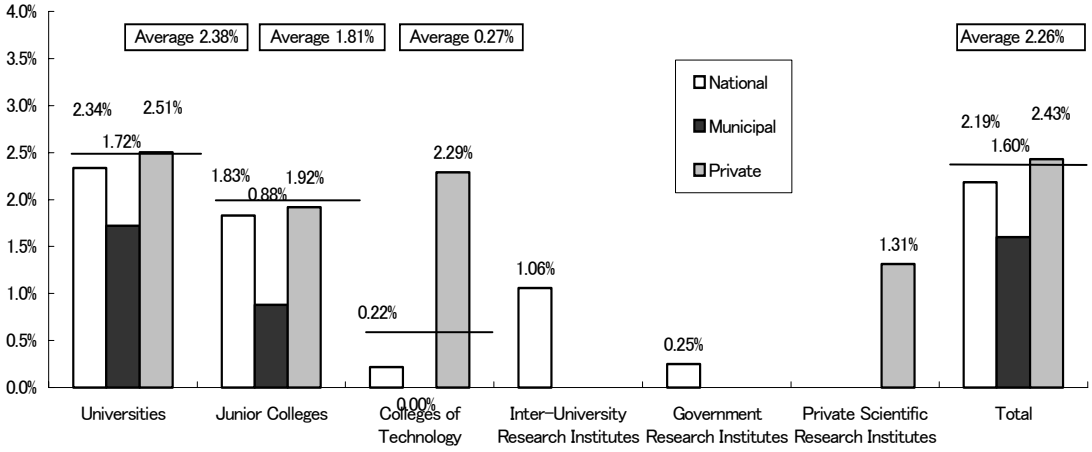

Figure 10　Ratio of Researchers with Non-Japanese Names by Institution Type

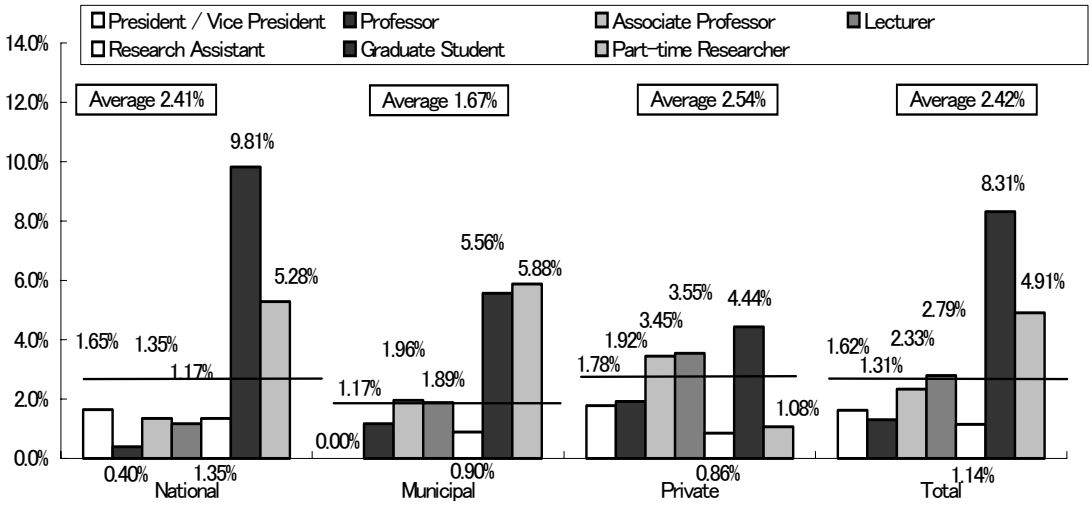

Figure 11　Ratio of Researchers with Non-Japanese Names by Professional Title

3. Academic Background

3.1 Last Degree Course Completed

Regarding the last degree course completed by the researchers, 106,092 persons (63.9%) hold a graduate degree. Of these, 62,373 (37.6% of the total) hold a doctorate degree and 41,210 (24.8% of the total) hold a master's degree. Also, 28,492 (17.2% of the total) have completed only an undergraduate degree and 31,343 (18.9% of the total) have completed only a junior college degree, or equivalent (Table 5).

The data on last degree course completed broken down by field of specialization shows that the field of science has the highest proportion of researchers with graduate degrees, at 90.6%, followed by economics, at 88.5%. Next come law and arts, at 87.0% and 86.0% respectively. These are followed in descending order by engineering (82.5%), agriculture (81.9%), interdisciplinary area (74.8%), and wide area (63.2%). Medicine is the lowest, at 51.7% (Figure 12).

An examination of the last degree course completed broken down by institution type shows that the percentage of researchers with graduate degrees is extremely high at government research institutes of the Ministry of Education, Science, Sports, and Culture, where the figures are 76.5% respectively. These are followed in descending order by colleges of technology (76.0%), universities (64.2%), inter-university research institutes (58.1%), junior colleges (54.8%), and private scientific research institutes (53.2%)(Figure 13).

A look at the ratio of researchers graduated from institutions in Japan and overseas institutions shows that 6,257 of all the researchers, or 3.8% of the total, are graduates of overseas institutions (Table 5). By field of specialization, their proportions are largest in arts (10.5%), wide area (8.1%), economics (7.1%), and law (6.8%). By type of institution, graduates of overseas institutions are comparatively numerous at junior colleges (4.0%) and universities (3.8%), exceeding the overall average.

Table 5 Last Degree Course Completed and Institution Location by Field of Specialization

Field of Specialization	Total	Graduate School				University	Junior College or Others	Country of School			
		Doctoral Course	Master's Course	Unknown	Total			Japan		Overseas	
								Persons	Percentage	Persons	Percentage
Arts	20,162	9,676	7,409	264	17,349	2,296	517	17,425	86.4%	2,112	10.5%
Law	2,857	1,761	688	38	2,487	312	58	2,571	90.0%	195	6.8%
Economics	5,285	3,507	1,115	53	4,675	532	78	4,752	89.9%	373	7.1%
Science	8,530	5,246	2,411	72	7,729	613	188	8,023	94.1%	212	2.5%
Engineering	13,074	5,681	4,997	106	10,784	1,927	363	12,356	94.5%	421	3.2%
Agriculture	4,178	1,829	1,538	55	3,422	683	73	3,982	95.3%	95	2.3%
Medicine	19,268	7,064	2,629	266	9,959	8,645	664	18,281	94.9%	311	1.6%
Interdisciplinary Area	12,903	5,203	4,297	157	9,657	2,836	410	12,176	94.4%	404	3.1%
Wide Area	2,243	570	706	141	1,417	630	196	1,923	85.7%	181	8.1%
Unknown	77,427	21,836	15,420	1,357	38,613	10,018	28,796	46,971	60.7%	1,953	2.5%
Total	165,927	62,373	41,210	2,509	106,092	28,492	31,343	128,460	77.4%	6,257	3.8%

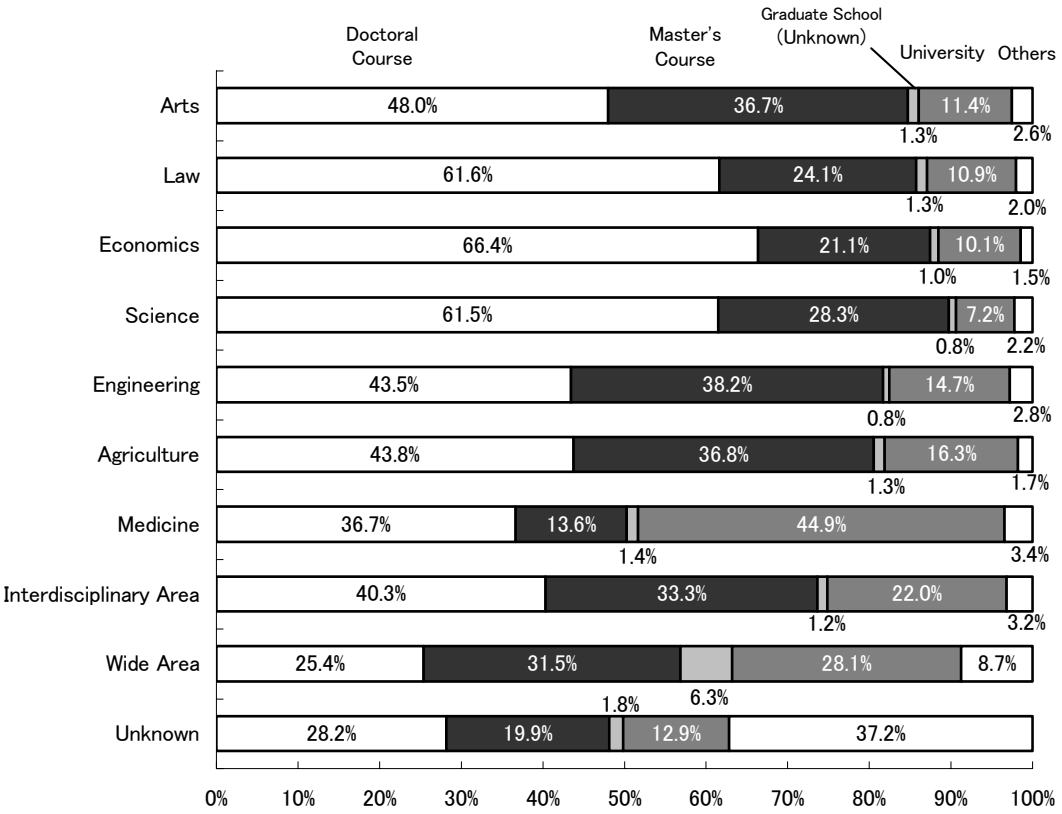

Figure 12　Last Degree Course Completed by Field of Specialization

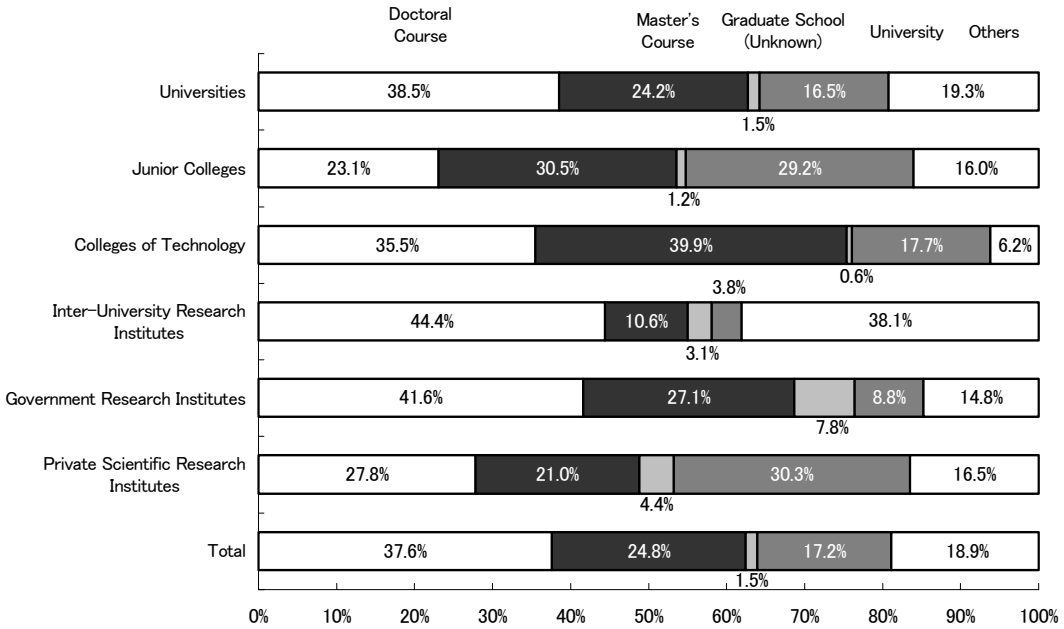

Figure 13　Last Degree Course Completed by Institution Type

3.2 Researchers with Doctorate Degrees

The number of the researchers with doctorate degrees is 75,743, which amounts to 45.6% of the total. Broken down by type degree, doctors of engineering are the most numerous, at 27.1%. Persons follow them in descending order with doctorates in medicine (22.6%), science (16.8%), and agriculture (6.8%). These figures are summarized in Figure 14 below.

Broken down by field of specialization, the proportion of researchers with doctorate degrees is relatively high in science (81.9%), agriculture (77.8%), engineering (76.6%), medicine (71.5%), and interdisciplinary area (53.2%). In contrast, the proportion of researchers with doctorate degrees is extremely low in the fields of arts, law, and economics, being 21.7%, 26.7%, and 34.9%, respectively (Figure 15).

Broken down by institution type, the proportion of researchers with doctorate degrees is highest at inter-university research institutes, at 56.8%. This is followed in descending order by colleges of technology (55.0%), private scientific research institutes (45.9%), and universities (45.9%). The proportion is comparatively low at government research institutes of the Ministry of Education, Science, Sports, and Culture (43.2%), and junior colleges (16.9%). Note that researchers with doctorate degrees account for the majority, 50.9%, of researchers at national institutions (Figure 16).

A breakdown by professional title of researchers with doctorate degrees shows that they form the highest proportion among the presidents and vice-presidents of institutions at 64.9%. These are followed in descending order by lecturers (60.1%), associate professors (60.1%), professors (59.8%), and research assistants(56.5%). Also, the proportion of researchers with doctorate degrees is highest of all among part-time researchers at 70.4% (Figure 17, Table 6).

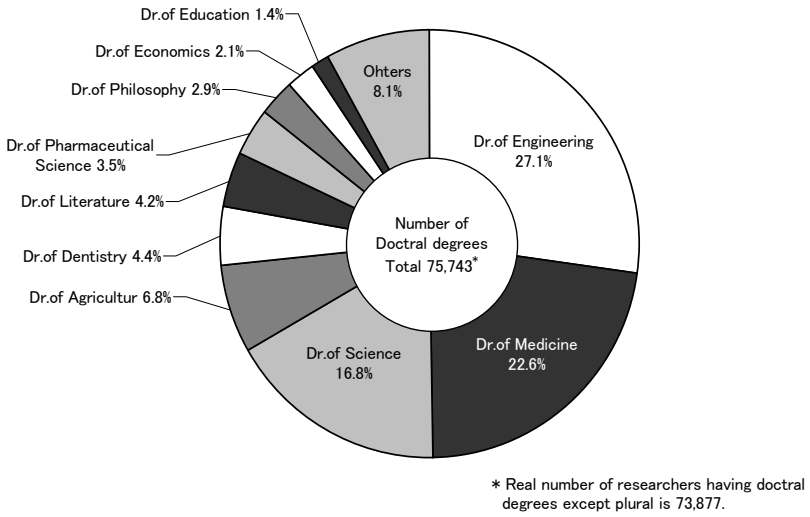

Figure 14　Researchers with Doctorate Degrees

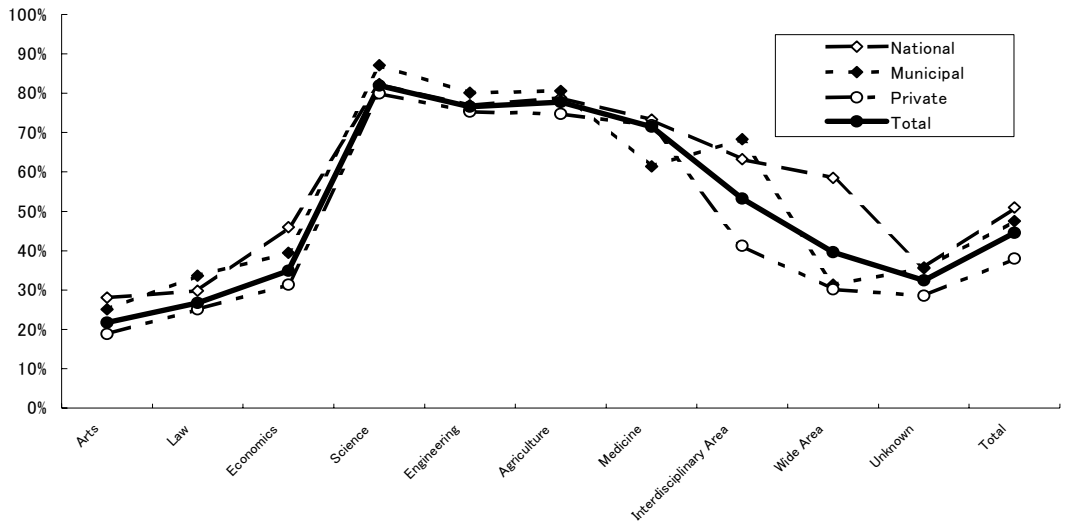

Figure 15　Ratio of Researchers with Doctorate Degrees by Field of Specialization / by Institution Governing Authority

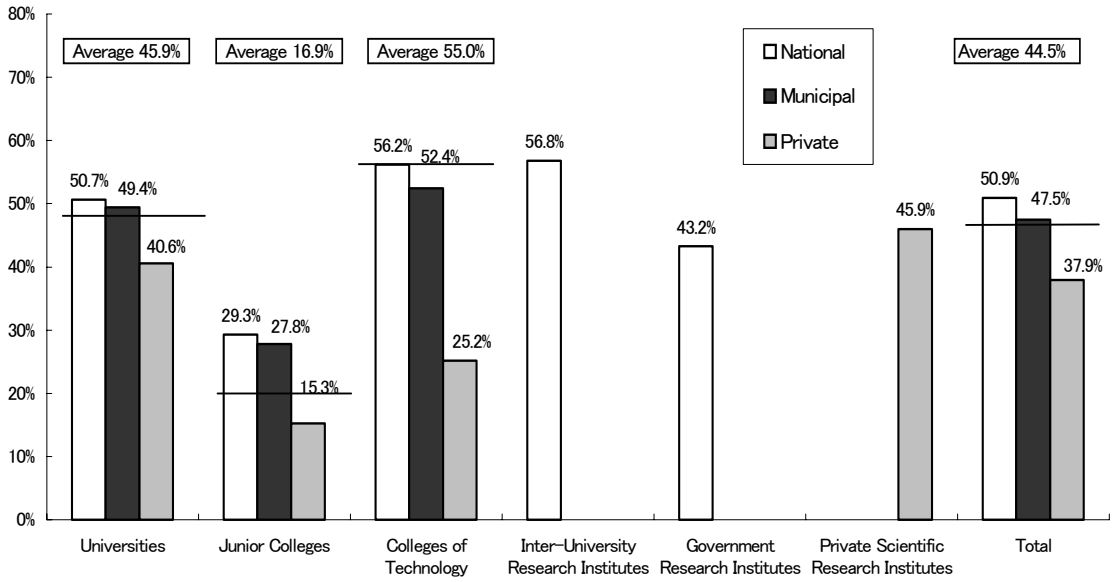

Figure 16　Ratio of Researchers with Doctorate Degrees by Institution Type　/ by Institution Governing Authority

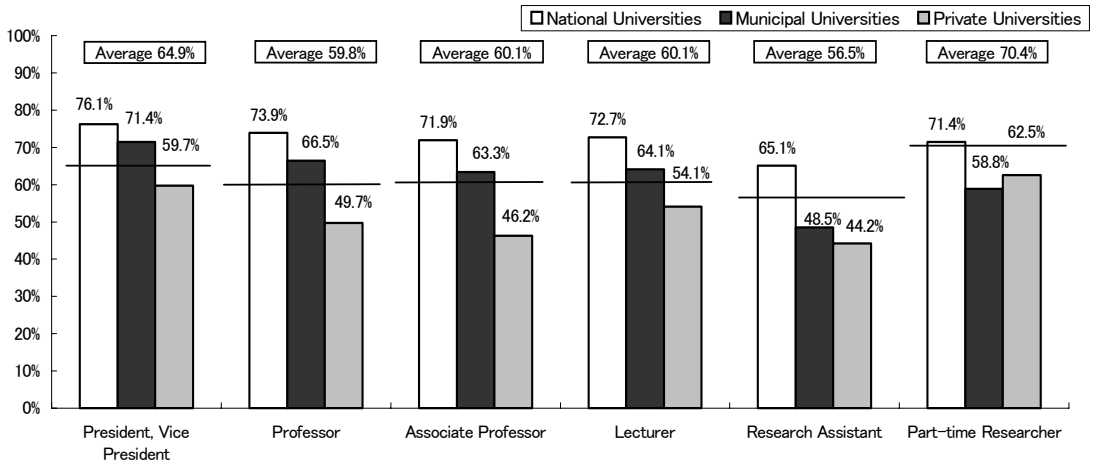

Figure 17 Ratio of University Researchers with Doctorate Degrees by Professional Title

Table 6 Ratio of University Researchers with Doctorate Degrees by Professional Title

Professional Title		Researcher	Doctor	Ratio of Doctorate Degrees
National Universities	President, Vice President	109	83	76.1%
	Professor	17,618	13,018	73.9%
	Associate Professor	14,444	10,385	71.9%
	Lecturer	3,791	2,755	72.7%
	Research Assistant	11,501	7,484	65.1%
	Part-time Researcher	863	616	71.4%
Municipal Universities	President, Vice President	28	20	71.4%
	Professor	2,650	1,761	66.5%
	Associate Professor	2,017	1,277	63.3%
	Lecturer	1,170	750	64.1%
	Research Assistant	1,767	857	48.5%
	Part-time Researcher	17	10	58.8%
Private Universities	President, Vice President	273	163	59.7%
	Professor	26,396	13,119	49.7%
	Associate Professor	12,772	5,904	46.2%
	Lecturer	8,683	4,694	54.1%
	Research Assistant	6,853	3,029	44.2%
	Part-time Researcher	80	50	62.5%
Total	President, Vice President	410	266	64.9%
	Professor	46,664	27,898	59.8%
	Associate Professor	29,233	17,566	60.1%
	Lecturer	13,644	8,199	60.1%
	Research Assistant	20,121	11,370	56.5%
	Part-time Researcher	960	676	70.4%

4. Current Research Topics

The survey subjects were asked what research topics they were currently working on, and a total of 231,574 responses were received. This works out to an average of 1.40 research topics per all the researchers. The averages per researcher at national, municipal, and private institutions were 1.42, 1.47, and 1.36 topics, respectively.

A look at the status of research broken down by field of research shows that the proportion of individual research is extremely high in the humanities and social sciences (arts, law, and economics), exceeding 75% in each of the fields named. On the other hand, the proportion of individual research is accounts for less than 50% of the total in the natural sciences (science, engineering, agriculture, and medicine) and interdisciplinary area. In these areas collaboration research is the norm. In particular, the share of topics entailing collaboration research involving partners from outside of the researcher's organization, both collaboration in Japan (25.0%) and international collaboration (11.9%) was higher in the field of science than in any other, accounting for 36.2% of the total for all collaborative research involving outside partners. In contrast, in medicine the proportion of collaboration research is high at 65.6%, but almost all of it involves collaboration in organization. In medicine the proportion of collaboration research involving outside partners is the lowest among all fields belonging to the natural sciences (Figure 18).

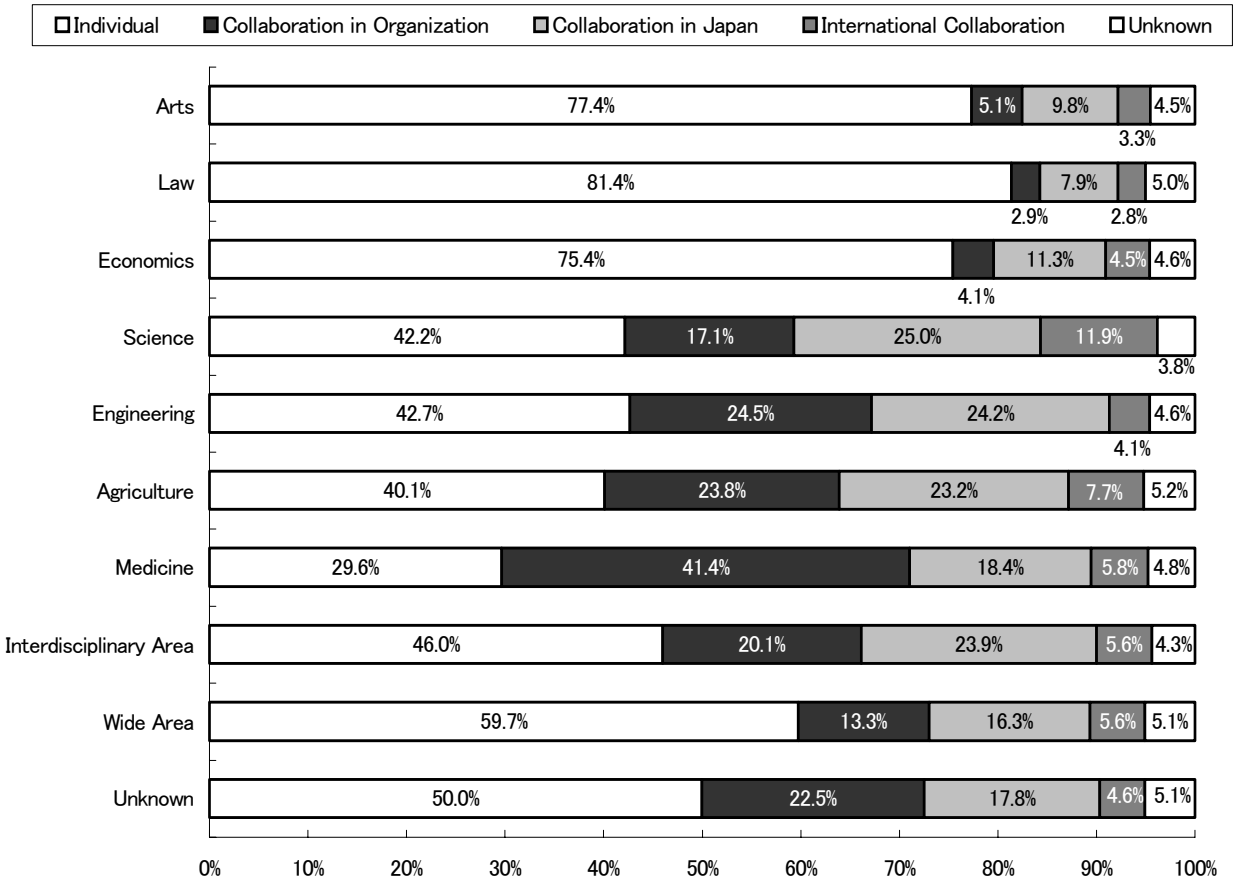

Figure 18　Research Topics and Status of Research by Field of Research

5. Overseas Research Activities

5.1 Traveling Abroad to Perform Research Activities

Of the entire group of researchers responding to the survey, the number who had engaged in two weeks or more of research work overseas during the one-year period preceding the survey was 11,867, or 7.2%. The figures broken down by institution governing authority were national institutions 7.9%, municipal institutions 7.4%, and private institutions 6.4% (Table 7).

Broken down by field of specialization, the figures were as follows, in descending order: agriculture (12.8%), science (11.3%), arts (10.4%), law (10.2%), economics (8.7%), interdisciplinary area (8.4%), Wide area (7.8%), and engineering (7.6%). Medicine had the lowest percentage at 5.7%. Also, an examination of the above categories broken down by institution governing authority indicates that the percentage of scholars attending international conferences, etc., overseas was highest in all fields other than law at national institutions (Table 7).

The breakdown by institution type shows that inter-university research institutes (10.6%) and government research institutes of the Ministry of Education, Science, Sports, and Culture (9.9%) have the highest percentages. These are followed in descending order by universities (7.3%), private scientific research institutes (6.0%), colleges of technology (5.7%), and junior colleges (4.4%). There are therefore significant differences between different types of institutions (Figure 19).

Broken down by age, there is a steady rise up to the 36 to 40 group in the percentage of scholars traveling abroad to perform research activities, as the age of the respondents increase. After that the percentage drops gradually as the age increases up to the 61 to 65 group. Also, up to the age of 60 the percentages are generally higher at national institutions, followed by municipal and private institutions, in that order (Figure 20).

Broken down by professional title, the percentages of professors, associate professors, and part-time researchers traveling abroad to perform research activities are higher than the general average, while the other professional title categories are below the general average (Figure 21).

Table 7　Number of Researchers Who Have Traveled Abroad by Field of Specialization / by Institution Governing Authority

Field of Specialization		National	Municipal	Private	Total
Arts	No. of Researchers	674	122	1,300	2,096
	Ratio	11.9%	10.7%	9.7%	10.4%
Law	No. of Researchers	73	14	203	290
	Ratio	9.4%	10.0%	10.5%	10.2%
Economics	No. of Researchers	114	38	308	460
	Ratio	10.5%	10.8%	8.0%	8.7%
Science	No. of Researchers	676	73	214	963
	Ratio	11.9%	15.1%	9.0%	11.3%
Engineering	No. of Researchers	627	63	309	999
	Ratio	7.8%	9.5%	7.1%	7.6%
Agriculture	No. of Researchers	384	39	110	533
	Ratio	14.8%	11.8%	8.8%	12.8%
Medicine	No. of Researchers	579	101	422	1,102
	Ratio	7.2%	5.5%	4.5%	5.7%
Interdisciplinary Area	No. of Researchers	577	65	443	1,085
	Ratio	9.5%	8.6%	7.3%	8.4%
Wide Area	No. of Researchers	53	11	110	174
	Ratio	7.2%	9.6%	7.9%	7.8%
Unknown	No. of Researchers	2,259	284	1,622	4,165
	Ratio	6.0%	5.6%	4.6%	5.4%
Total	No. of Researchers	6,016	810	5,041	11,867
	Ratio	7.9%	7.4%	6.4%	7.2%

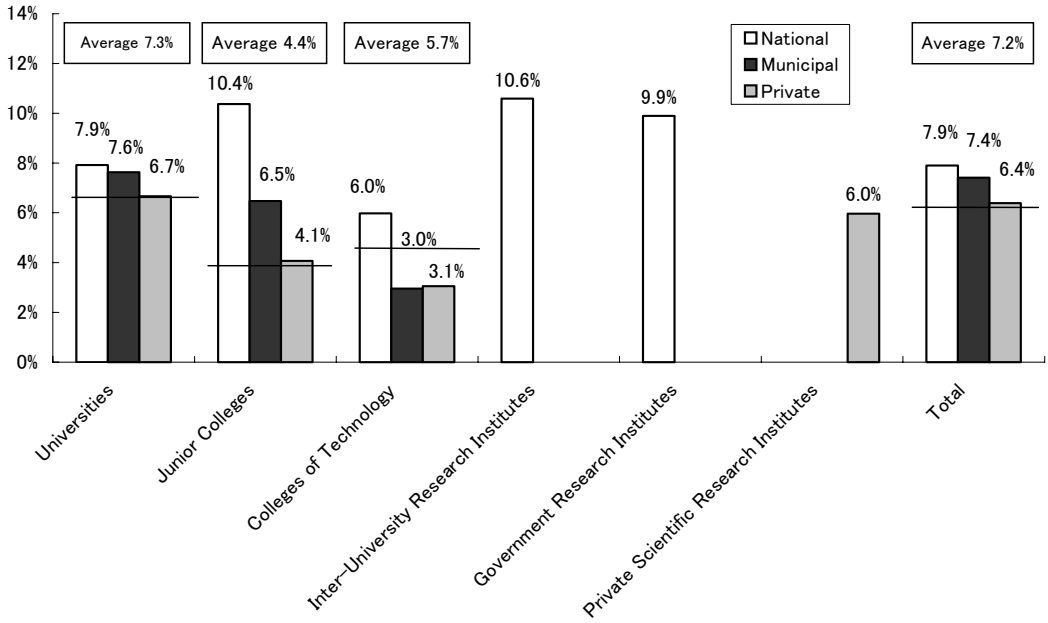

Figure 19　Ratio of Researchers Who Have Traveled Abroad by Institution Type / by Institution Governing Authority

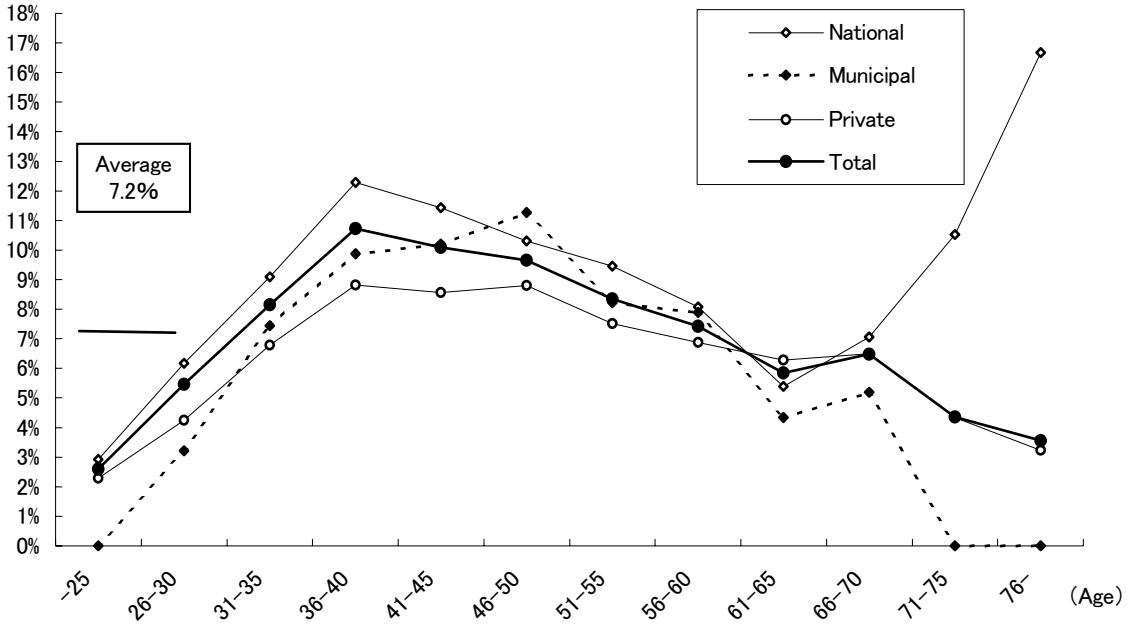

Figure 20　Ratio of Researchers Who Have Traveled Abroad by Age
/ by Institution Governing Authority

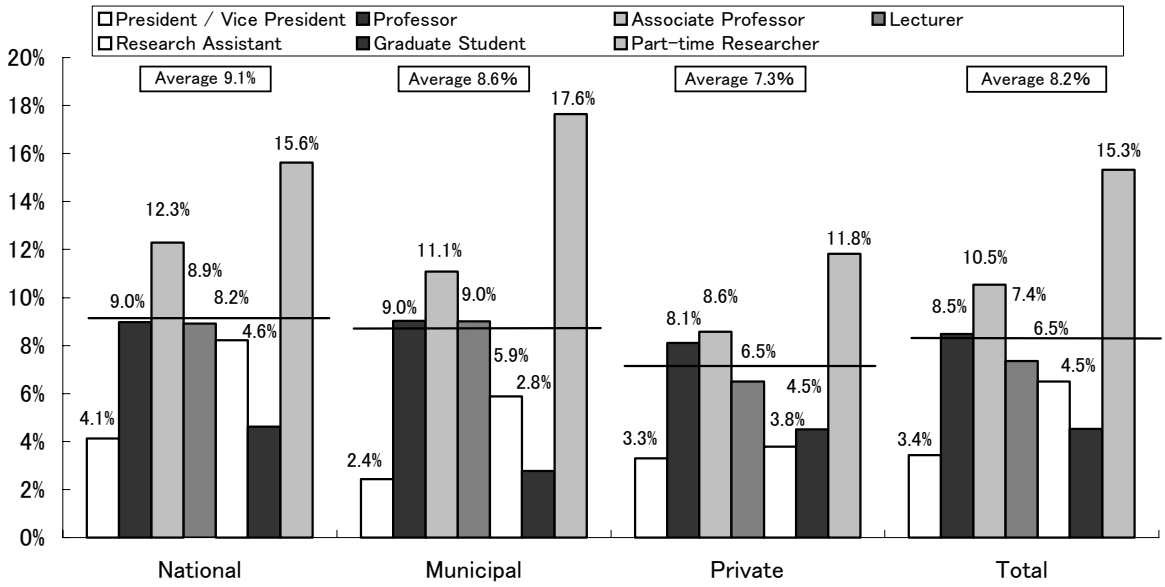

Figure 21　Ratio of Researchers Who Have Traveled Abroad by Professional Title
/ by Institution Governing Authority

5.2 Participation in International Conferences and Scientific Societies Overseas

Of the entire group of researchers responding to the survey, the number who had attended an international conference or scientific society meeting overseas during the one-year period preceding the survey was 27,044, or 16.3%. The figures broken down by institution governing authority were national institutions 19.3%, municipal institutions 16.2%, and private institutions 13.5%. In comparison with the percentages of researchers traveling abroad to perform research activities, there was a larger deviation associated with institution governing authority.

Broken down by field of specialization, the percentages were relatively high for fields in the natural sciences such as engineering (27.1%), agriculture (24.2%), science (23.9%), and medicine (22.7%), all of which were above the overall average. In contrast, the percentages tended to be low in fields in the humanities and social sciences, such as (in descending order) arts (12.0%), economics (11.2%), and law (10.7%). Also, an examination of the above categories broken down by institution governing authority indicates that the percentage of scholars attending international conferences, etc., overseas was highest in all fields other than law at national institutions (Table 8).

The breakdown by institution type shows that inter-university research institutes (22.8%) have the highest percentage, followed in descending order by government research institutes of the Ministry of Education, Science, Sports, and Culture (20.9%), universities (16.9%), and colleges of technology (15.8%). The lowest percentages are for private scientific research institutes and junior colleges, at 14.7% and 6.4%, respectively (Figure 22).

Broken down by professional title, the percentages of professors, associate professors, assistants and part-time researchers attending international conferences, etc., overseas are higher than the general average (Figure 23).

Broken down by age, there is a steady rise up to the 41 to 45 group in the percentage of scholars attending international conferences, etc., overseas as the age of the respondents increases. After that the percentages remain steady at around 15% up to the 61 to 65 group. Also, the percentages are generally higher at national institutions, followed by municipal and private institutions, in that order. National institutions and private institutions difference is particularly large in the 41 to 45 age group (Figure 24).

Figure 25 plots the proportions of researchers traveling abroad to perform research activities together with the proportions attending international conferences or scientific society meetings overseas. It shows that the percentage of researchers with experience attending international conferences, etc., overseas is higher in all age groups than the percentage with experience traveling abroad to perform research activities. Also, the 36 to 40 group in the percentage with experience traveling abroad to perform research activities was highest in all age groups. On the other hand, the 36 to 40 group in the percentage with experience attending international conferences, etc., overseas was highest in all age groups.

A breakdown by institution governing authority of the party covering expenses for

participation in international conferences, etc., overseas shows at national institutions a relatively high proportion (25.2%) for Ministry of Education, Science, Sports, and Culture or Japan Society for the Promotion of Science funding, with the proportions for foundations, etc. (including donations and proxy account funds)(21.2%) also higher than that for municipal or private institutions. On the other hand, at private institutions the proportion accounted for by affiliated institutions (39.0%) was much higher than that at national or municipal institutions. In the case of municipal institutions researchers covering their own expenses (32.1%) are the most prominent (Figure 26).

The breakdown by field of specialization of the party covering expenses for participation in international conferences, etc., overseas indicates that the proportion of researchers covering their own expenses is extremely high in medicine and arts (37.3% and 30.2%, respectively). Also, a high proportion (28.5%) of such participation is covered by foundations, etc. (including donations and proxy account funds) in the field of engineering, and the use of Ministry of Education, Science, Sports, and Culture or Japan Society for the Promotion of Science funding is high (32.4%) in the field of science (Figure 27).

Table 8 Number of Researchers Who Have Participated in International Conferences, Etc., Overseas by Field of Specialization / by Institution Governing Authority

Field of Specialization		National	Municipal	Private	Total
Arts	No. of Researchers	766	130	1,517	2,413
	Ratio	13.6%	11.4%	11.3%	12.0%
Law	No. of Researchers	83	19	205	307
	Ratio	10.7%	13.6%	10.6%	10.7%
Economics	No. of Researchers	136	36	421	593
	Ratio	12.5%	10.2%	10.9%	11.2%
Science	No. of Researchers	1,385	130	527	2,042
	Ratio	24.4%	27.0%	22.2%	23.9%
Engineering	No. of Researchers	2,263	195	1,086	3,544
	Ratio	28.1%	29.4%	25.0%	27.1%
Agriculture	No. of Researchers	708	77	225	1,010
	Ratio	27.3%	23.3%	17.9%	24.2%
Medicine	No. of Researchers	2,004	383	1,990	4,377
	Ratio	25.0%	20.7%	21.2%	22.7%
Interdisciplinary Area	No. of Researchers	1,511	190	1,036	2,737
	Ratio	24.8%	25.2%	17.1%	21.2%
Wide Area	No. of Researchers	120	19	135	274
	Ratio	16.2%	16.5%	9.7%	12.2%
Unknown	No. of Researchers	5,678	587	3,482	9,747
	Ratio	15.2%	11.5%	10.0%	12.6%
Total	No. of Researchers	14,654	1,766	10,624	27,044
	Ratio	19.3%	16.2%	13.5%	16.3%

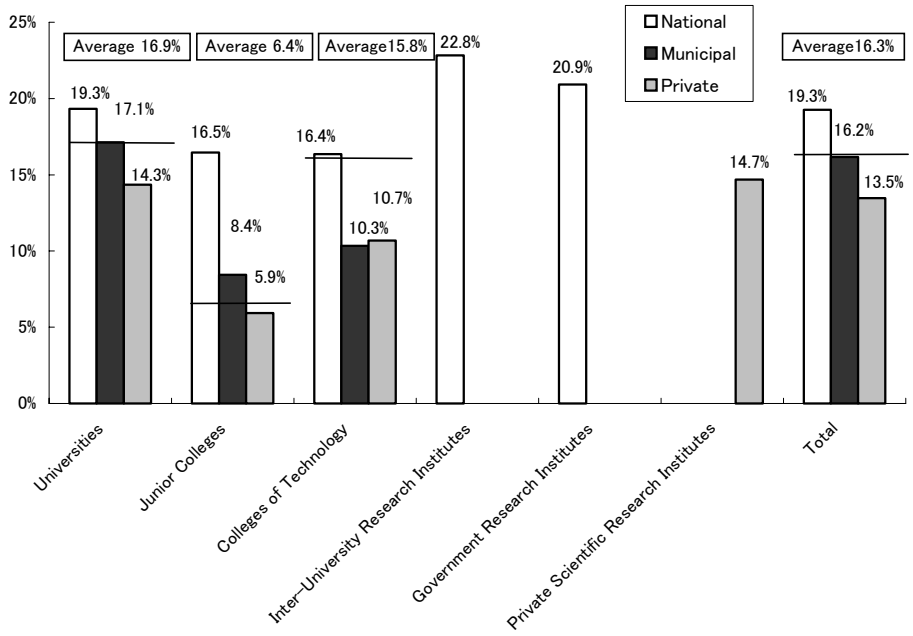

Figure 22 Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Institution Type / by Institution Governing Authority

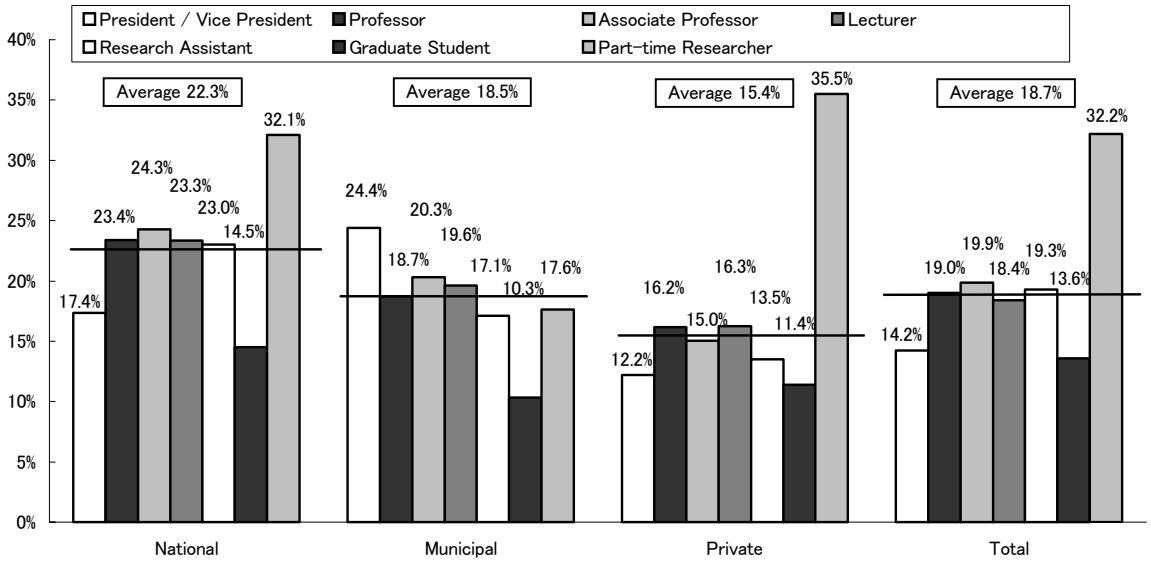

Figure 23 Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Professional Title

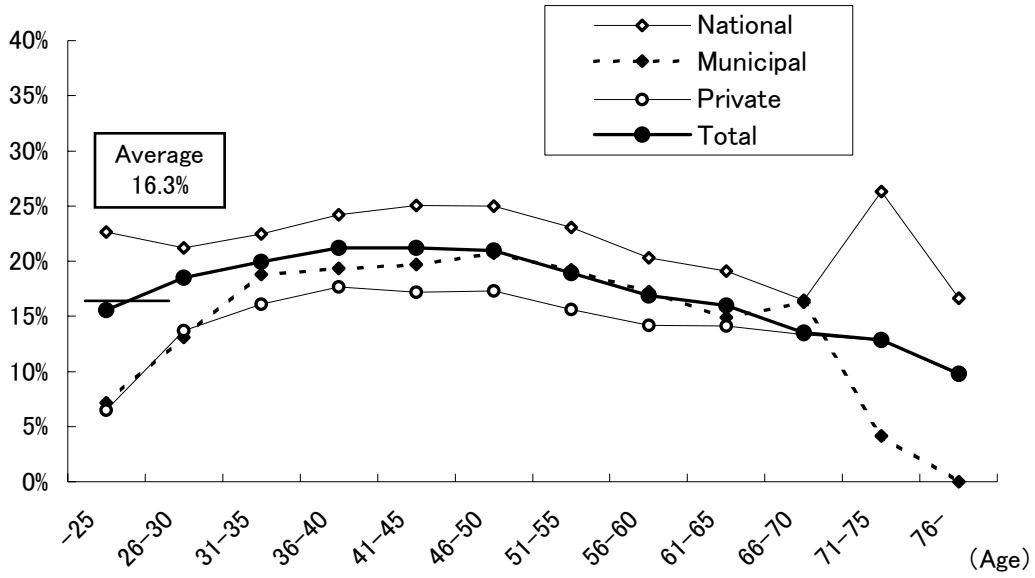

Figure 24　Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Age / by Institution Governing Authority

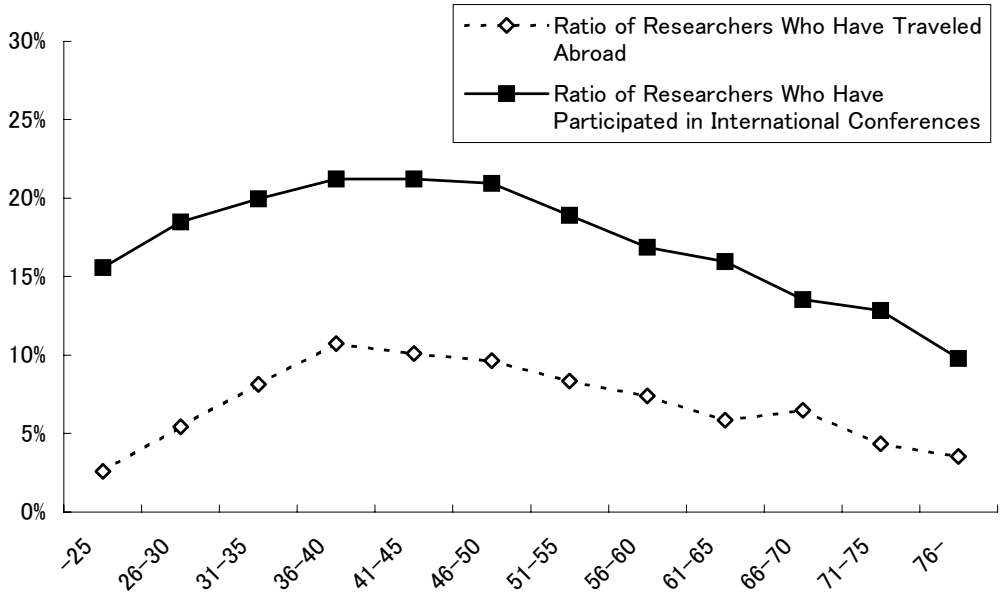

Figure 25　Ratio of Researchers Who Have Traveled Abroad and Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Age

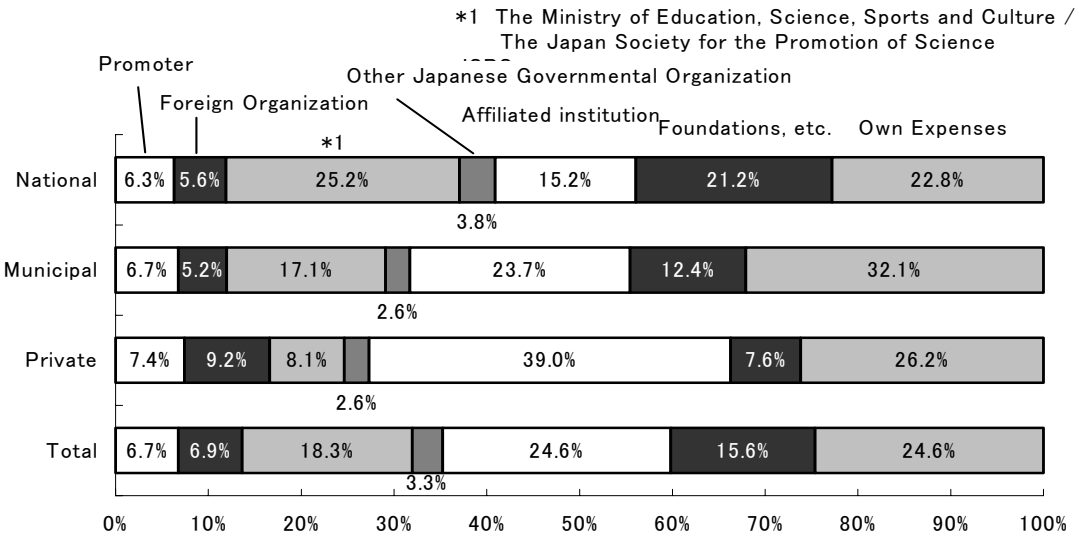

Figure 26 Party Covering Expenses for Participation in International Conferences, Etc., Overseas by Institution Governing Authority

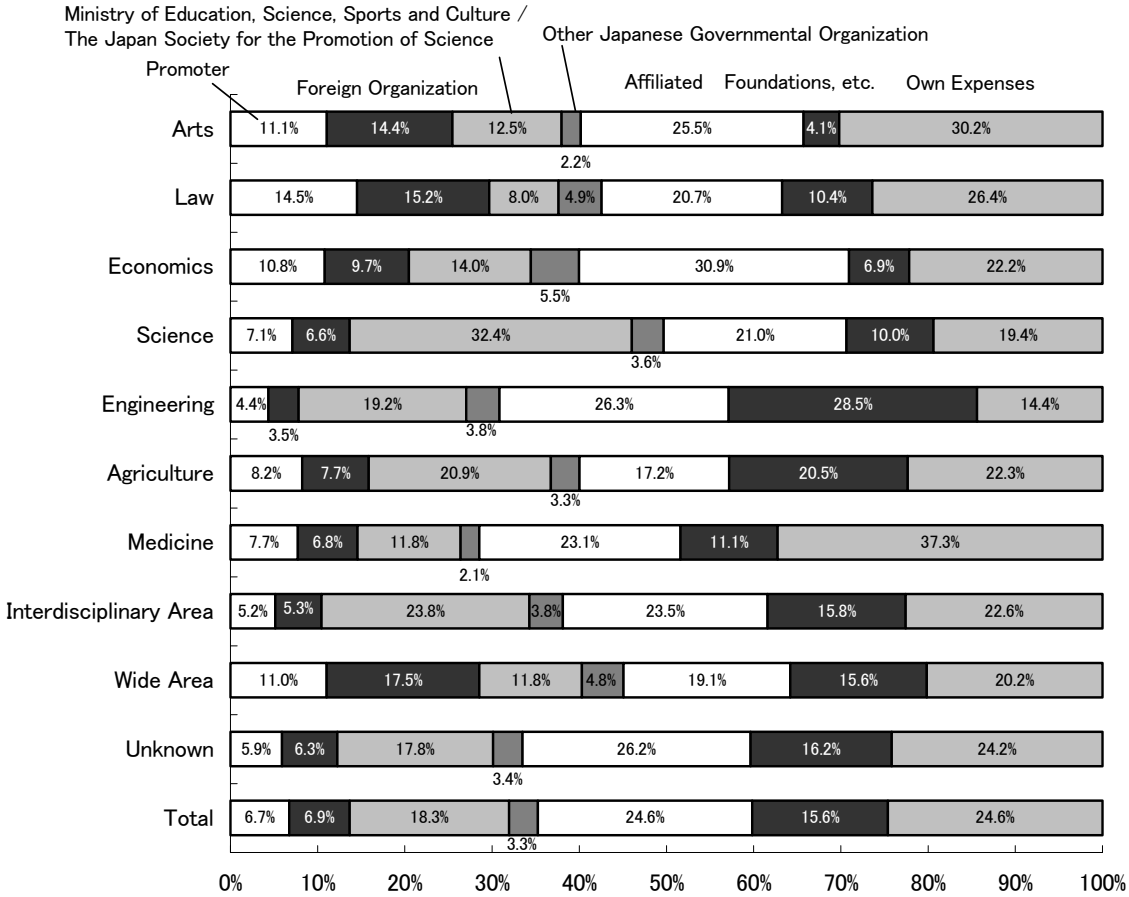

Figure 27 Party Covering Expenses for Participation in International Conferences, Etc., Overseas by Field of Specialization

5.3 Speech at International Conferences and Scientific Societies Overseas

Of the entire group of researchers responding to the survey, the number who had spoken at international conference or scientific society meeting overseas during the one-year period preceding the survey was 25,358, or 15.3%. The figures broken down by institution governing authority were national institutions 18.8%, municipal institutions 15.4%, and private institutions 11.9%. In comparison with the percentages of researchers traveling abroad to perform research activities, there was a larger deviation associated with institution governing authority.

Broken down by field of specialization, the percentages were relatively high for fields in the natural sciences such as engineering (27.6%), agriculture (23.6%), science (23.5%), and medicine (21.5%), all of which were above the overall average. In contrast, the percentages tended to be low in fields in the humanities and social sciences, such as (in descending order) arts (9.0%), economics (8.4%), and law (7.2%). Also, an examination of the above categories broken down by institution governing authority indicates that the percentage of scholars speaking at international conferences, etc., overseas was highest in all fields other than law at national institutions (Table 9).

The breakdown by institution type shows that inter-university research institutes (22.8%) have the highest percentage, followed in descending order by government research institutes of the Ministry of Education, Science, Sports, and Culture (19.3%), colleges of technology (16.4%), and universities (15.8%). The lowest percentages are for private scientific research institutes and junior colleges, at 13.6% and 5.2%, respectively (Figure 28).

Broken down by professional title, the percentages of associate professors, assistants and part-time researchers speaking at international conferences, etc., overseas are higher than the general average. For all professional title categories the percentages were generally higher at national institutions, followed by municipal and private institutions, in that order (Figure 29).

Broken down by age, there is a steady rise up to the 41 to 45 group in the percentage of scholars speaking at international conferences, etc., overseas as the age of the respondents increases. After that the percentages remain steady at around 14% up to the 61 to 65 group. Also, the percentages are generally higher at national institutions, followed by municipal and private institutions, in that order. This disparity is particularly large in the 26 to 30 age group (Figure 30).

Figure 31 plots the proportions of researchers traveling abroad to perform research activities together with the proportions speaking at international conferences or scientific society meetings overseas. It shows that the percentage of researchers with experience speaking at international conferences, etc., overseas is higher in all age groups than the percentage with experience traveling abroad to perform research activities. Also, the 36 to 40 group in the percentage with experience traveling abroad to perform research activities and experience speaking at international conferences, etc., overseas was highest in all age groups.

Table 9　Number of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Field of Specialization / by Institution Governing Authority

Field of Specialization		National	Municipal	Private	Total
Arts	No. of Researchers	628	103	1,090	1,821
	Ratio	11.1%	9.0%	8.2%	9.0%
Law	No. of Researchers	56	13	137	206
	Ratio	7.2%	9.3%	7.1%	7.2%
Economics	No. of Researchers	117	30	295	442
	Ratio	10.8%	8.5%	7.7%	8.4%
Science	No. of Researchers	1,372	134	501	2,007
	Ratio	24.2%	27.8%	21.1%	23.5%
Engineering	No. of Researchers	2,302	191	1,110	3,603
	Ratio	28.5%	28.8%	25.5%	27.6%
Agriculture	No. of Researchers	693	71	220	984
	Ratio	26.7%	21.5%	17.5%	23.6%
Medicine	No. of Researchers	1,927	358	1,862	4,147
	Ratio	24.1%	19.4%	19.8%	21.5%
Interdisciplinary Area	No. of Researchers	1,505	192	977	2,674
	Ratio	24.7%	25.4%	16.1%	20.7%
Wide Area	No. of Researchers	105	13	117	235
	Ratio	14.2%	11.3%	8.4%	10.5%
Unknown	No. of Researchers	5,599	574	3,066	9,239
	Ratio	15.0%	11.3%	8.8%	11.9%
Total	No. of Researchers	14,304	1,679	9,375	25,358
	Ratio	18.8%	15.4%	11.9%	15.3%

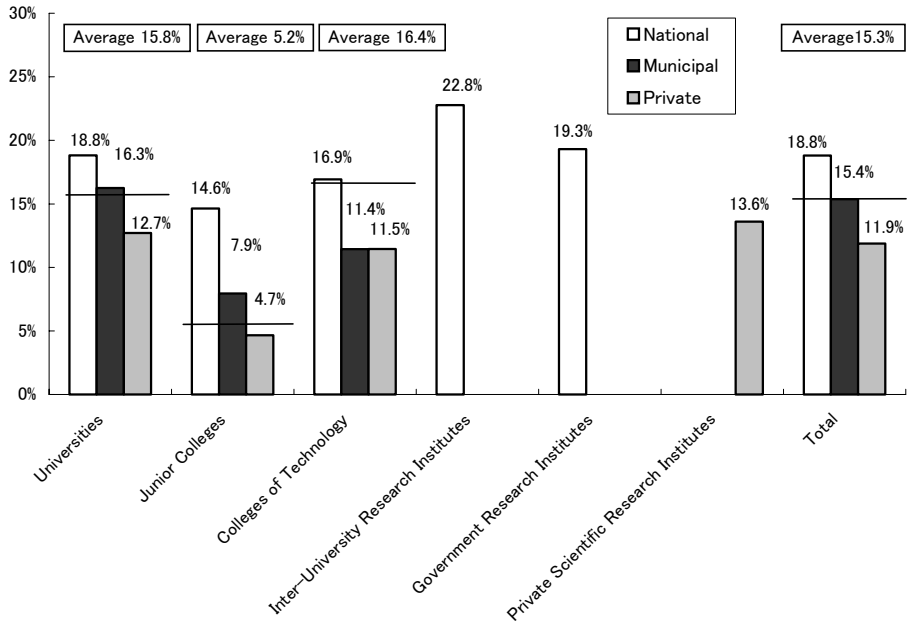

Figure 28 Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Institution Type / by Institution Governing Authority

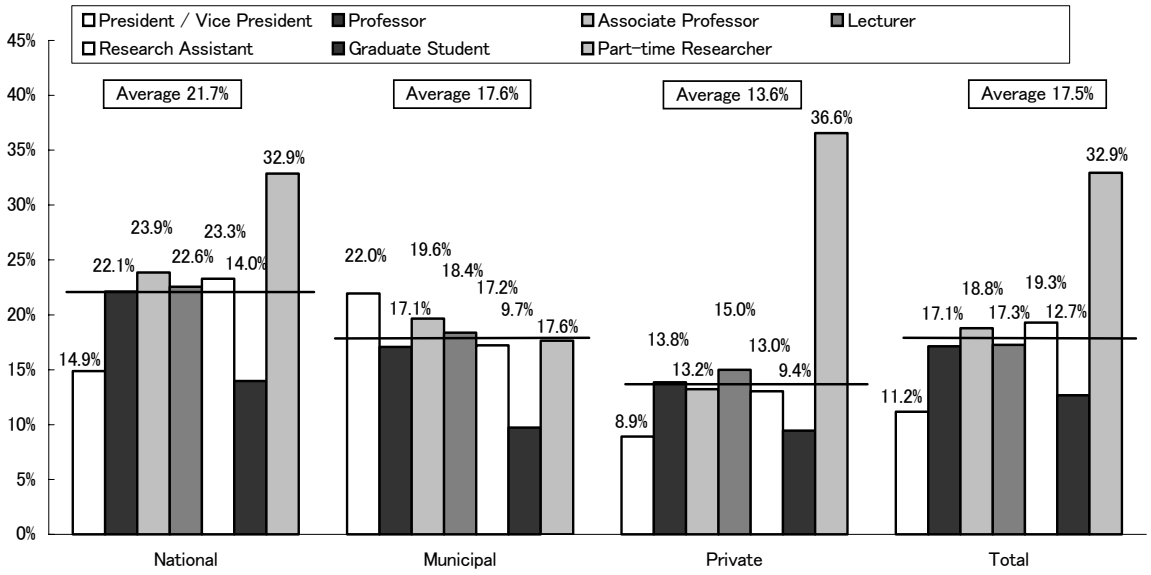

Figure 29 Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Professional Title

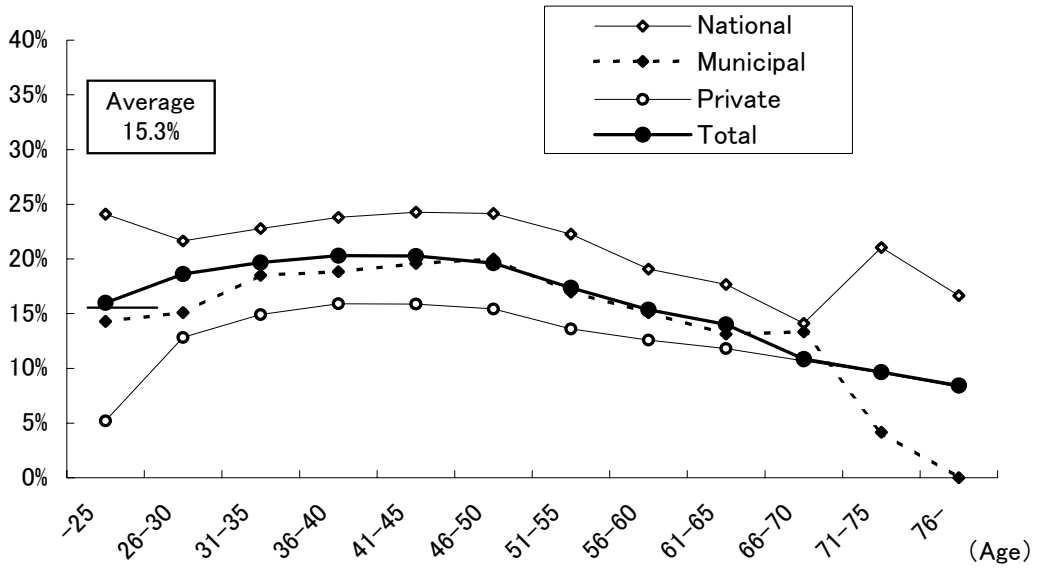

Figure 30 Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Age / by Institution Governing Authority

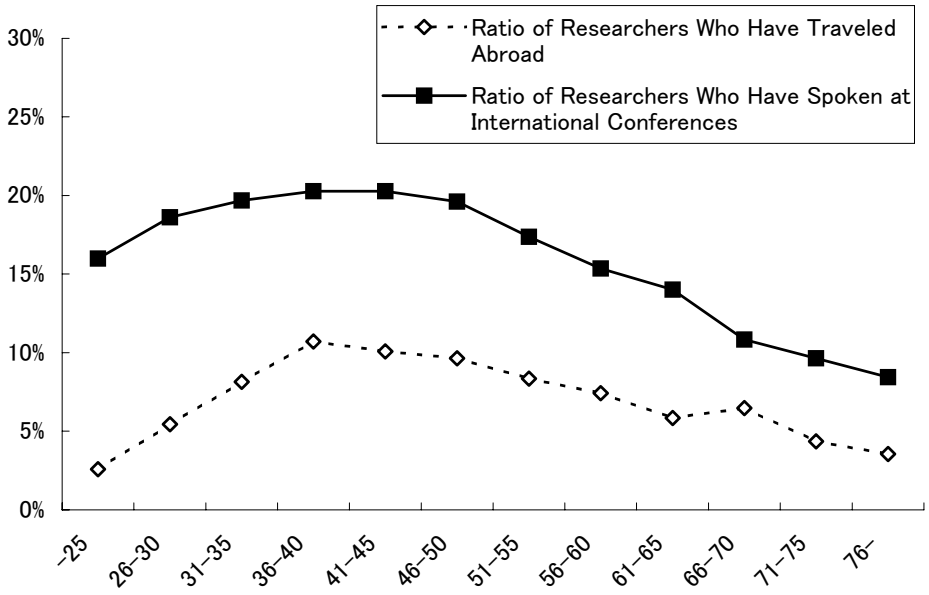

Figure 31 Ratio of Researchers Who Have Traveled Abroad and Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Age

6. Use of Languages Other Than Japanese by International Conferences and Scientific Societies

6.1 Principal Languages Other Than Japanese Used to Present Research Findings to Research Societies

An examination of the principal languages other than Japanese used to present research findings at the conferences of international academic societies, etc., shows an enormous gap between the most widely used language, English (99,862 respondents, 96.0%) and the second most widely used language, German (3,523 respondents, 3.4%).

Broken down by field of specialization, 99% or more of researchers presenting research findings in languages other than Japanese used English in fields in the natural sciences, such as science, engineering, agriculture, and medicine, and in interdisciplinary area. In contrast, fewer researchers used English in the fields of arts and law than was the case in the natural sciences, with the percentages being 84.7% and 86.9%, respectively. In these two fields the proportion of usage of German and French was relatively high. The percentages for arts were German 9.7% and French 7.1%, and those for law were German 18.9% and French 8.7% (Table 10).

The percentage of researchers using two or more languages other than Japanese to present research findings were highest in fields in the humanities and social sciences such as law, arts, and economics, and low in the natural sciences (Figure 32).

6.2 Principal Languages Other Than Japanese Used to Write Papers

An examination of the principal languages other than Japanese used to write papers for presentation at the conferences of international academic societies, etc., shows an enormous gap between the most widely used language, English (100,201 respondents, 96.5%) and the second most widely used language, German (4,028 respondents, 3.9%).

Broken down by field of specialization, 99% or more of researchers writing papers in languages other than Japanese used English in fields in the natural sciences, such as science, engineering, agriculture, and medicine, and in interdisciplinary area. In contrast, fewer researchers used English in the fields of arts and law than in the fields of natural sciences, with the percentages being 86.3% and 88.2%, respectively. In these two fields the proportion of usage of German and French was relatively high. The percentages for arts were German 10.8% and French 7.6%, and those for law were German 22.0% and French 9.5% (Table 11).

The percentage of researchers using two or more languages other than Japanese to write papers were highest in fields in the humanities and social sciences such as law, arts, and economics, and were low in the natural sciences (Figure 33).

Table 10　Number of Researchers by Field of Specialization / by Language Other Than Japanese Used to Present Research Findings, Etc.

Field of Specialization	Total	Language								Unknown
		Total of users other than Japanese	English	French	Spanish	Russian	German	Chinese	Others	
Arts	20,162	13,927	11,797	984	268	173	1,350	877	879	6,235
Law	2,857	2,095	1,821	182	28	33	395	89	88	762
Economics	5,285	3,933	3,805	102	36	42	195	112	149	1,352
Science	8,530	7,485	7,474	82	15	11	52	27	22	1,045
Engineering	13,074	11,268	11,244	45	21	11	72	94	98	1,806
Agriculture	4,178	3,488	3,468	19	11	1	29	32	46	690
Medicine	19,268	15,526	15,513	63	22	2	125	65	54	3,742
Interdisciplinary Area	12,903	9,736	9,654	76	35	15	133	80	104	3,167
Wide Area	2,243	1,290	1,194	40	12	13	79	26	61	953
Unknown	77,427	35,265	33,892	713	158	131	1,093	720	631	42,162
Total	165,927	104,013	99,862	2,306	606	432	3,523	2,122	2,132	61,914

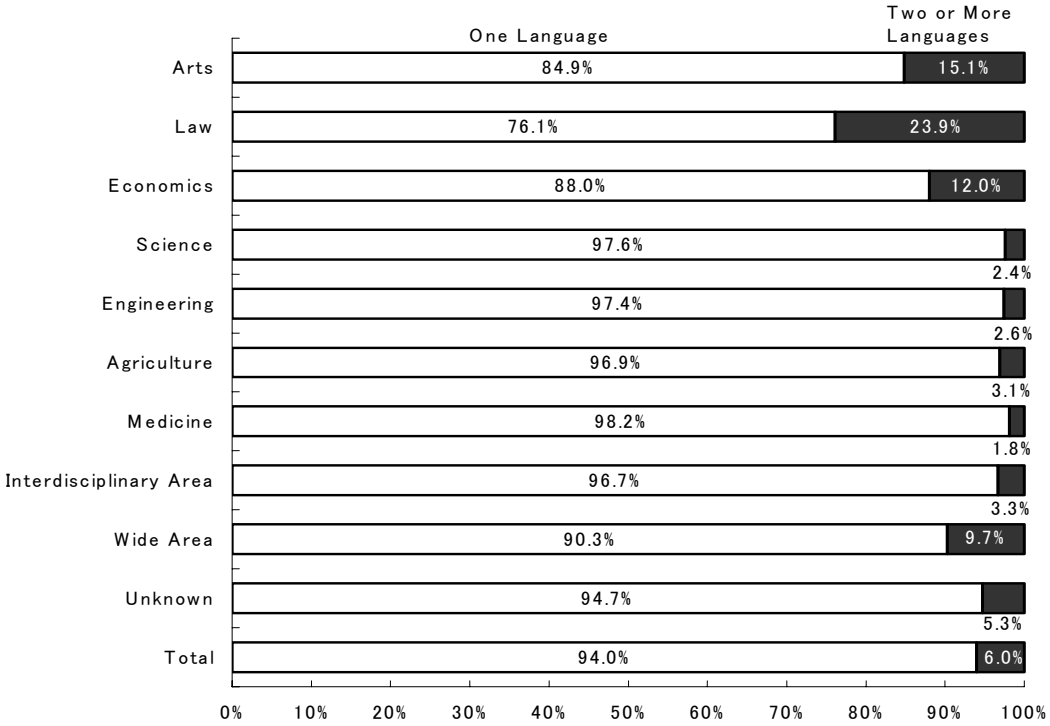

Figure 32　Proportion of Researchers by Field of Specialization / by Number of Languages Other Than Japanese Used to Present Research Findings, Etc.

Table 11　Number of Researchers by Field of Specialization / by Language Other Than Japanese Used to Write Papers

Field of Specialization	Total	Languages								Unknown
		Total of users other than Japanese	English	French	Spanish	Russian	German	Chinese	Others	
Arts	20,162	13,813	11,926	1,052	254	185	1,488	875	741	6,349
Law	2,857	2,105	1,856	199	27	28	464	79	85	752
Economics	5,285	3,989	3,889	138	25	46	262	99	133	1,296
Science	8,530	7,658	7,654	102	12	14	70	18	18	872
Engineering	13,074	11,397	11,379	57	12	11	115	75	76	1,677
Agriculture	4,178	3,535	3,525	18	9	2	47	27	21	643
Medicine	19,268	15,391	15,376	49	17	3	130	47	35	3,877
Interdisciplinary Area	12,903	9,791	9,729	79	26	10	174	73	78	3,112
Wide Area	2,243	1,238	1,163	33	13	16	67	24	49	1,005
Unknown	77,427	34,950	33,704	732	142	126	1,211	645	486	42,477
Total	165,927	103,867	100,201	2,459	537	441	4,028	1,962	1,722	62,060

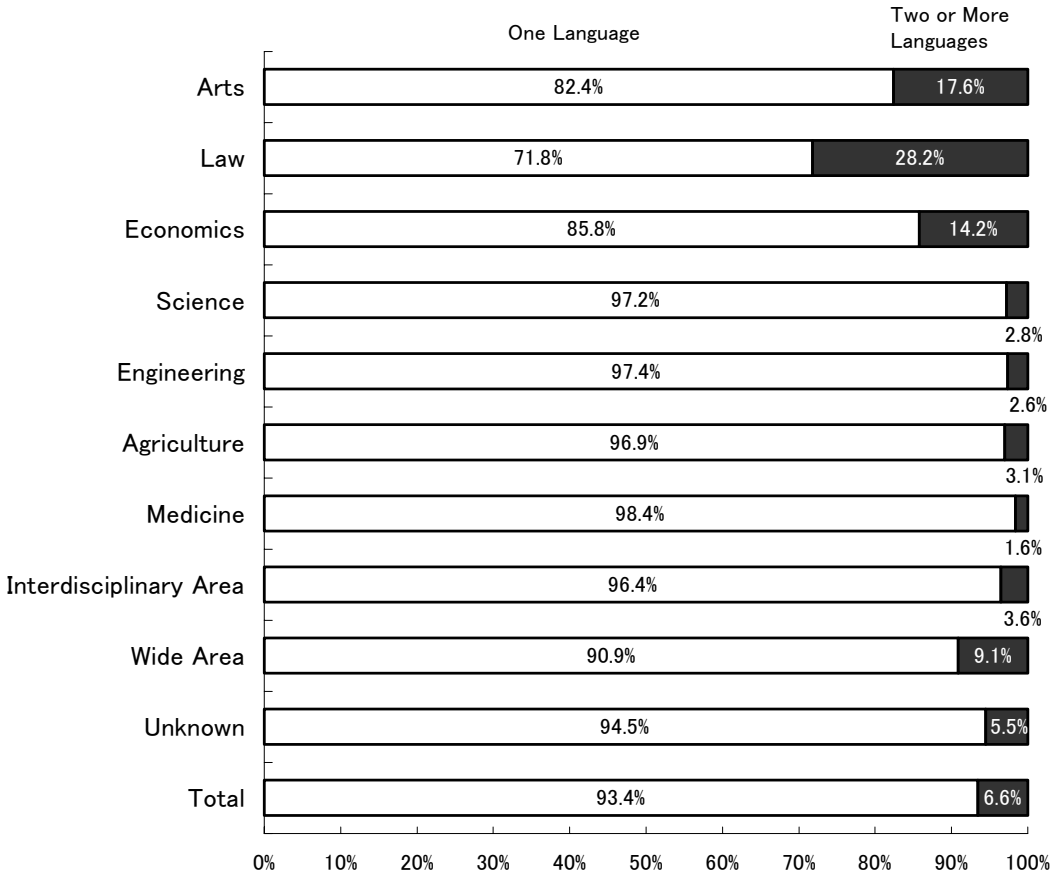

Figure 33　Proportion of Researchers by Field of Specialization/by Number of Languages Other Than Japanese Used to Write Papers

7. Academic Society Affiliations of Researchers

7.1 Japanese Academic Societies

Membership in Japanese academic societies was reported by 118,176, or 71.2%, of the researchers responding. Overall, the average number of such memberships per researcher (including in the total researchers not belonging to any academic societies) was 2.5.

Broken down by institution governing authority, the figures were national institutions 68.0%, municipal institutions 73.5 and private institutions 74.0%. There were no significant differences correlating with institution governing authority.

Broken down by number of academic society affiliations, researchers belonging to three academic societies were most numerous at national, municipal, and private institutions. The next largest group at municipal and private institutions (but not national ones) was researchers belonging to two academic societies, followed by researchers belonging to four (Figure 34).

The average number of memberships at municipal institutions was 3.9, at private institutions 3.7, and at national institutions 3.4. There were no significant differences correlating with institution governing authority.

In contrast, broken down by field of specialization, the average number of academic society memberships was highest was medicine, where the number of memberships per individual averages 4.6. In the field of science the average number of memberships was low because 28.1% of the respondents in this field belonged to one academic society only(Table 12).

Broken down by field of specialization, researchers not belonging to any academic societies were in descending order by wide area (19.8%), science (13.1%), law (12.5%), arts (11.1%), interdisciplinary area (11.0%), medicine (10.7%), and agriculture (9.4%)(Figure 35).

.

The type of institution for which the average number of academic society memberships was highest was junior colleges (2.6), followed in descending order by universities (2.6), colleges of technology (2.5), private scientific research institutes (2.1), government research institutes of the Ministry of Education, Science, Sports, and Culture (2.0), and inter-university research institutes (1.4) (Figure 36). Note that the average number of memberships was high among researchers affiliated with municipal junior colleges because a high proportion of the researchers at these institutions are in the medical field.

Table 12　Average Number of Academic Society Affiliations (Japanese) by Field of Specialization

Field of Specialization	National	Municipal	Private	Total
Arts	3.6	3.8	3.6	3.6
Law	3.1	3.2	3.3	3.3
Economics	3.1	3.5	3.6	3.5
Science	2.6	2.9	2.8	2.7
Engineering	3.4	3.7	3.6	3.5
Agriculture	3.9	4.1	4.2	4.0
Medicine	4.5	4.8	4.6	4.6
Interdisciplinary Area	3.7	4.2	3.7	3.7
Wide Area	3.8	3.3	3.5	3.6
Unknown	3.0	3.5	3.3	3.2
Total	3.4	3.9	3.7	3.6

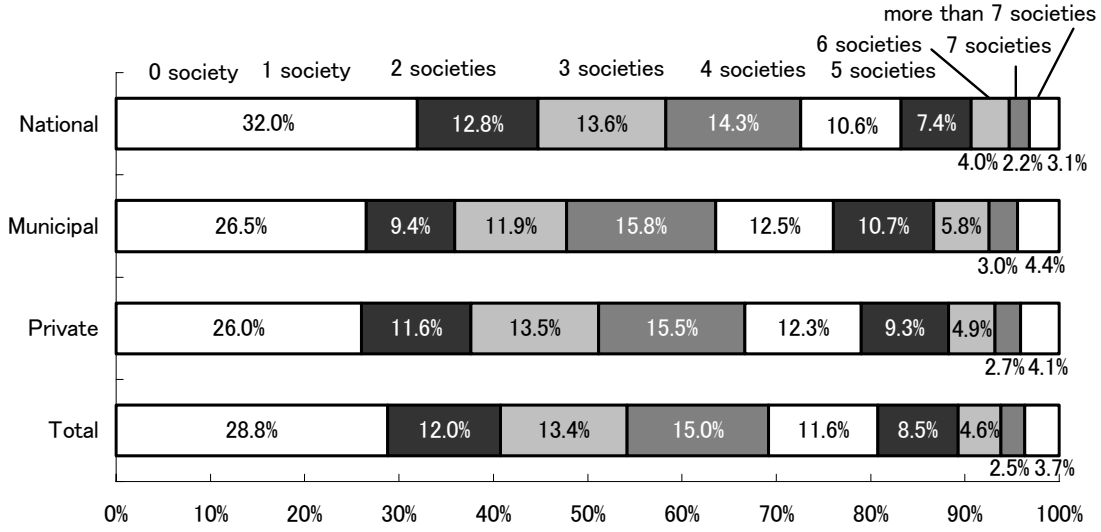

Figure 34　Ratio of Average Number of Academic Society Affiliations (Japanese) by Institution Governing Authority

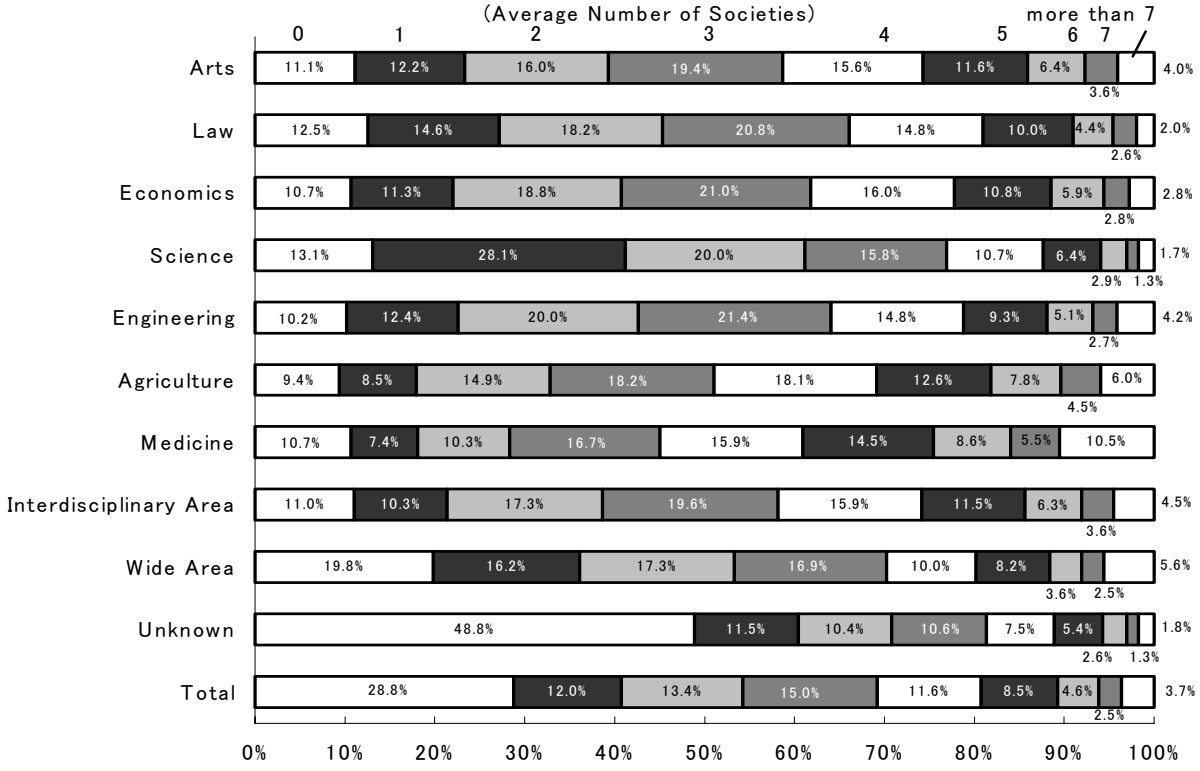

Figure 35　Ratio of Average Number of Academic Society Affiliations (Japanese) by Field of Specialization

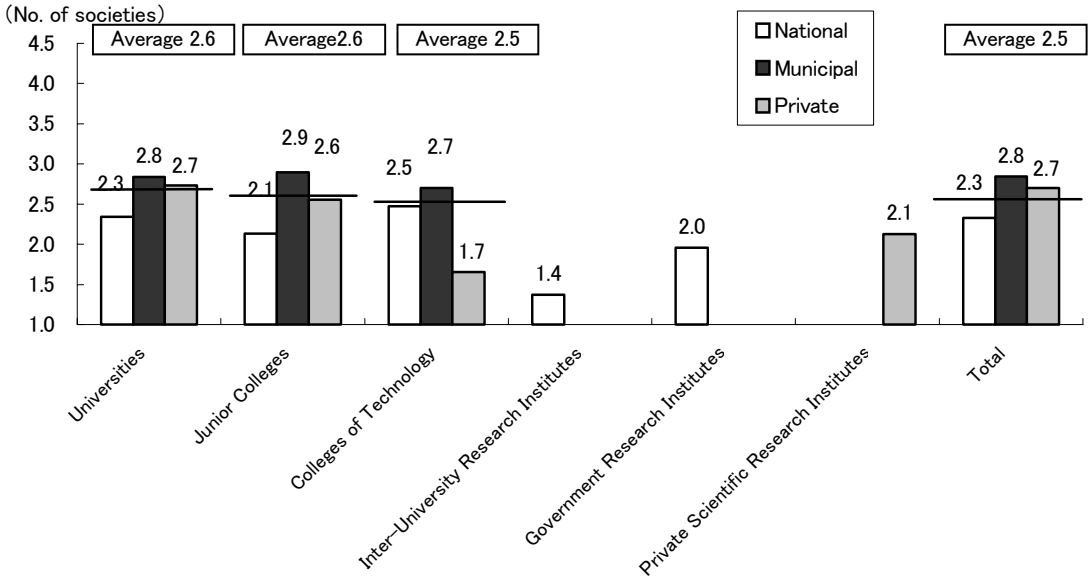

Figure 36　Average Number of Academic Society Affiliations (Japanese) by Institution Type/ by Institution Governing Authority

7.2 Overseas Academic Societies

Membership in one or more overseas academic societies was reported by 30,191, or 18.2%, of the researchers responding. Overall, the average number of such memberships per researcher (including in the total researchers not belonging to any overseas academic societies) was 0.3. Compared with the figures of 118,176 researchers (71.2%) for membership in Japanese academic societies, these figures are extremely low, although that is perhaps to be expected.

Broken down by institution governing authority, national institutions have the largest proportion of researchers belonging to overseas academic societies at 19.8% or 15,091 persons. The next is municipal institutions at 19.1% and private institutions at 16.5%. The average number of memberships at national, municipal, and private institutions was 1.5 (Table 13), with most researchers who belong to overseas academic societies having either one or two such memberships. There are also some researchers who belong to three or more overseas academic societies, though their numbers are small (Figure 37).

Broken down by field of specialization, the percentage of researchers belonging to overseas academic societies was high in fields in the natural sciences such as engineering (29.4%), science (29.0%), medicine (28.6%), and agriculture (28.2%). It was somewhat lower in fields in the humanities and social sciences such as economics (19.2%), arts (17.5%), and law (15.9%) (Figure 38).

The type of institution for which the average number of academic society memberships was highest was government research institutes of the Ministry of Education, Science, Sports, and Culture at 1.56, followed by universities in second place at 1.50 (Figure 39).

Table 13 Average Number of Academic Society Affiliations (Overseas) Among Respondents Affiliated with Overseas Academic Society, by Field of Specialization

Field of Specialization	National	Municipal	Private	Total
Arts	1.5	1.6	1.5	1.5
Law	1.5	1.4	1.5	1.5
Economics	1.5	1.5	1.4	1.5
Science	1.5	1.4	1.4	1.5
Engineering	1.4	1.4	1.4	1.4
Agriculture	1.5	1.5	1.4	1.5
Medicine	1.7	1.6	1.6	1.7
Interdisciplinary Area	1.5	1.3	1.5	1.5
Wide Area	1.7	1.4	1.6	1.6
Unknown	1.4	1.5	1.4	1.4
Total	1.5	1.5	1.5	1.5

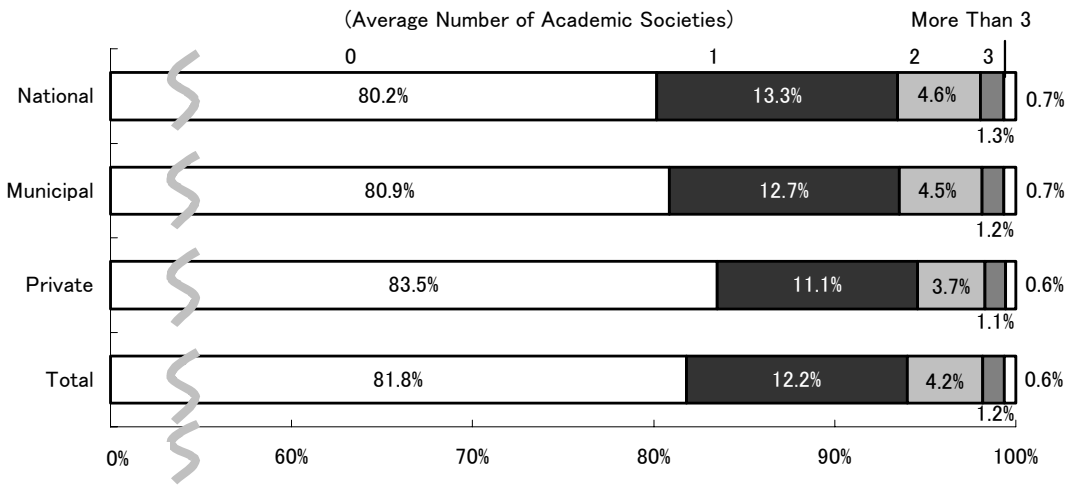

Figure 37　Ratio of Average Number of Academic Society Affiliations (Overseas) by Institution Governing Authority

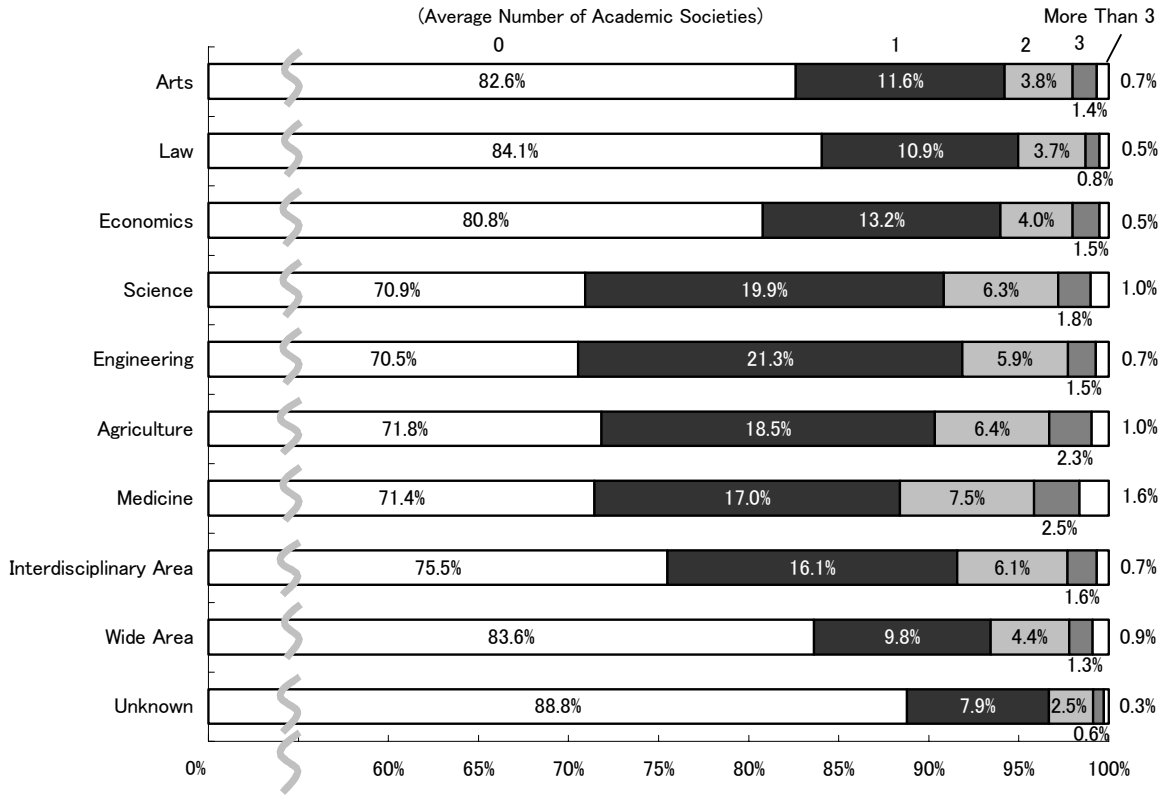

Figure 38　Ratio of Average Number of Academic Society Affiliations (Overseas) by Field of Specialization

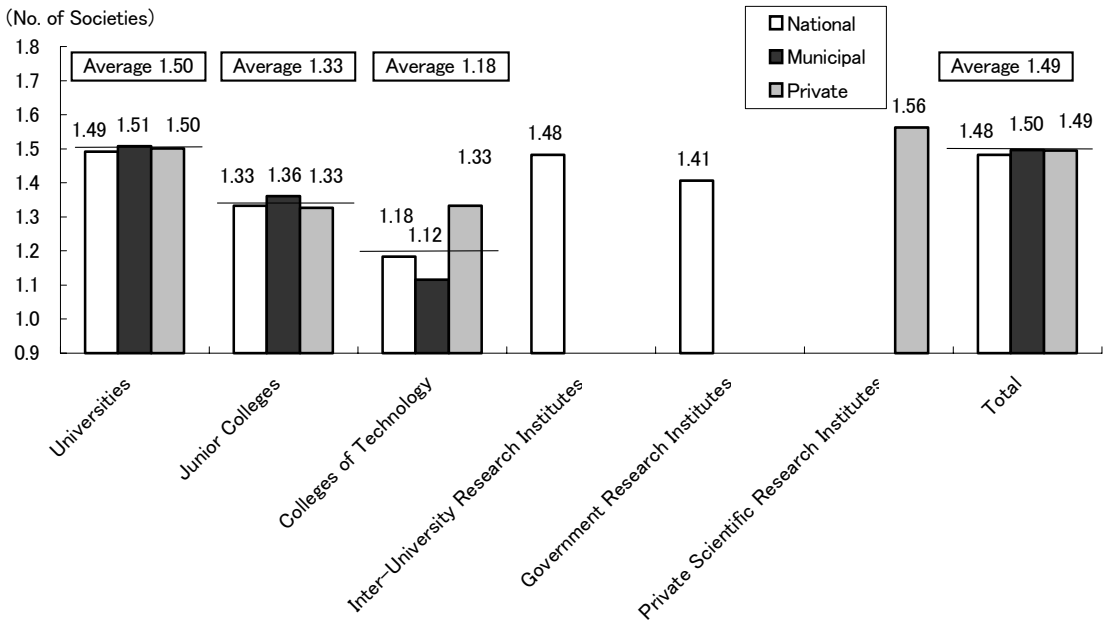

Figure 39 Average Number of Academic Society Affiliations (Overseas) Among Respondents Affiliated with Overseas Academic Society, by Institution Type / by Institution Governing Authority

8. Academic Awards Received

8.1 Japanese Awards Received

Of the total number of researchers, 26,739 or 16.1% have received some sort of Japanese academic award. The breakdown by institution governing authority is national institutions 19.5%, municipal institutions 15.2%, and private institutions 13.0%.

Broken down by field of specialization, the percentage of Japanese award holders was highest in engineering (39.2%), followed in descending order by agriculture (30.7%) and wide area (25.6%)(Figure 40).

The type of institution with the largest percentage of Japanese award holders was universities at 16.6%. This was followed in descending order by private scientific research institutes (16.3%), inter-university research institutes (15.9%), colleges of technology (15.1%), government research institutes of the Ministry of Education, Science, Sports, and Culture (13.8%), and junior colleges (8.9%)(Figure 41).

For all respondents overall, the average number of Japanese academic awards received was 0.29. The breakdown by institution governing authority is national institutions 0.36, municipal institutions 0.27, and private institutions 0.23. The breakdown by field of specialization puts engineering (0.89) in first place, followed by wide area (0.64) and agriculture (0.48) (Figure 42).

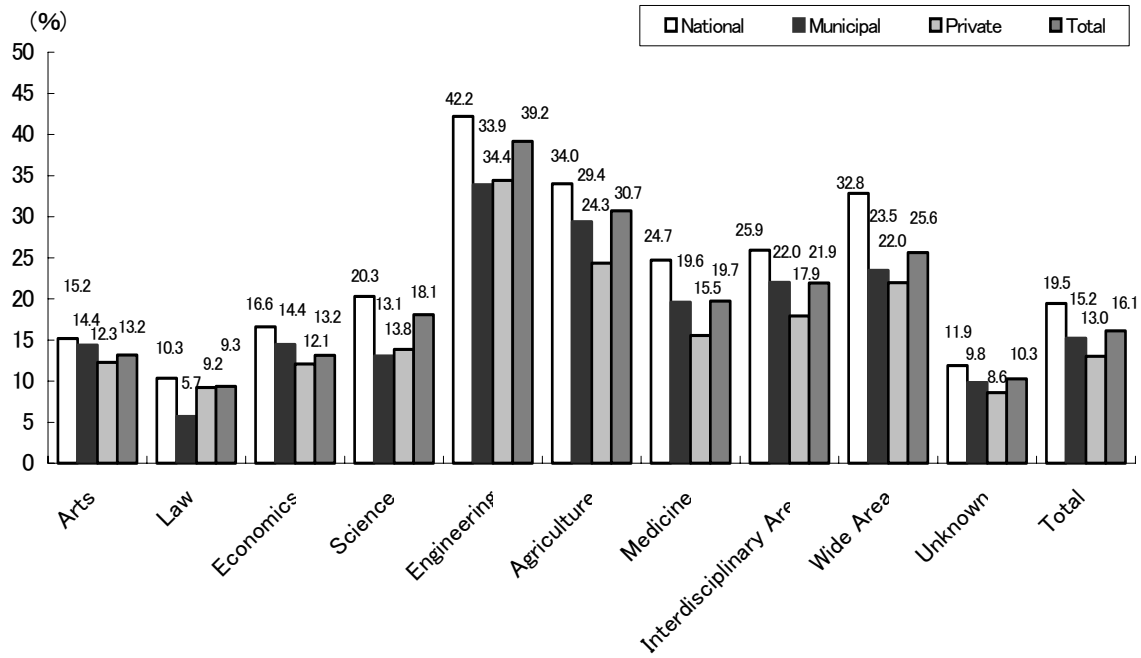

Figure 40 Ratio of Persons Who Have Received Awards (Japanese) by Field of Specialization

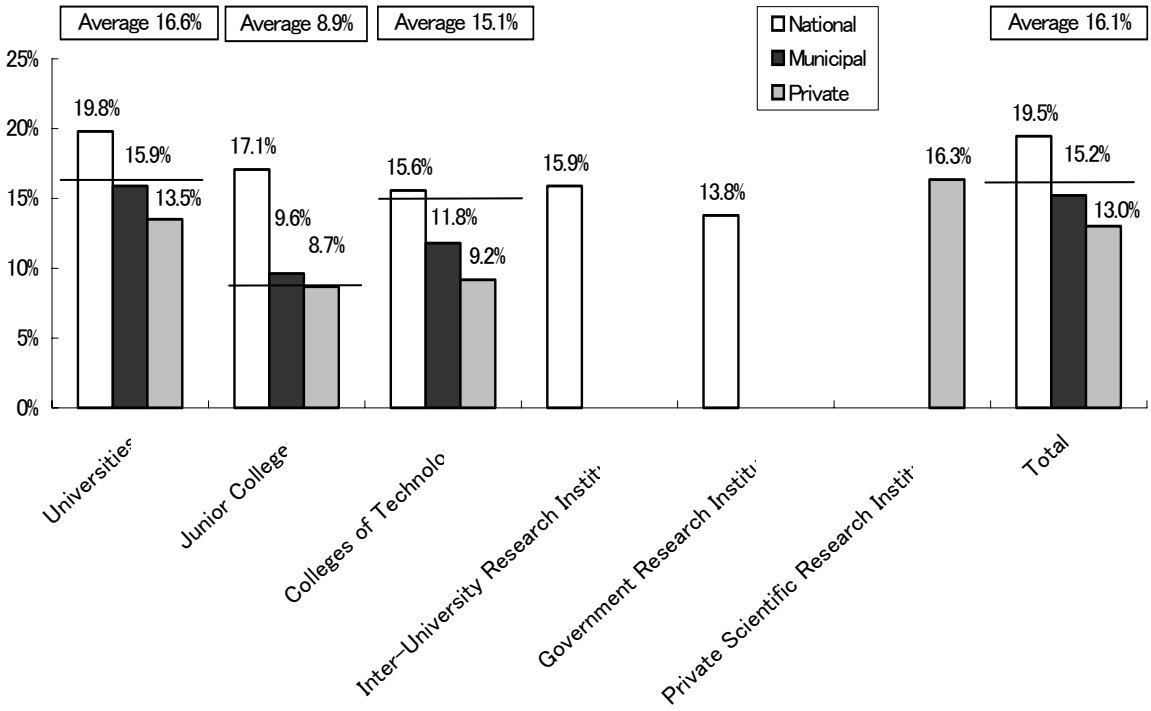

Figure 41　Ratio of Persons Who Have Received Awards (Japanese) by Institution Type

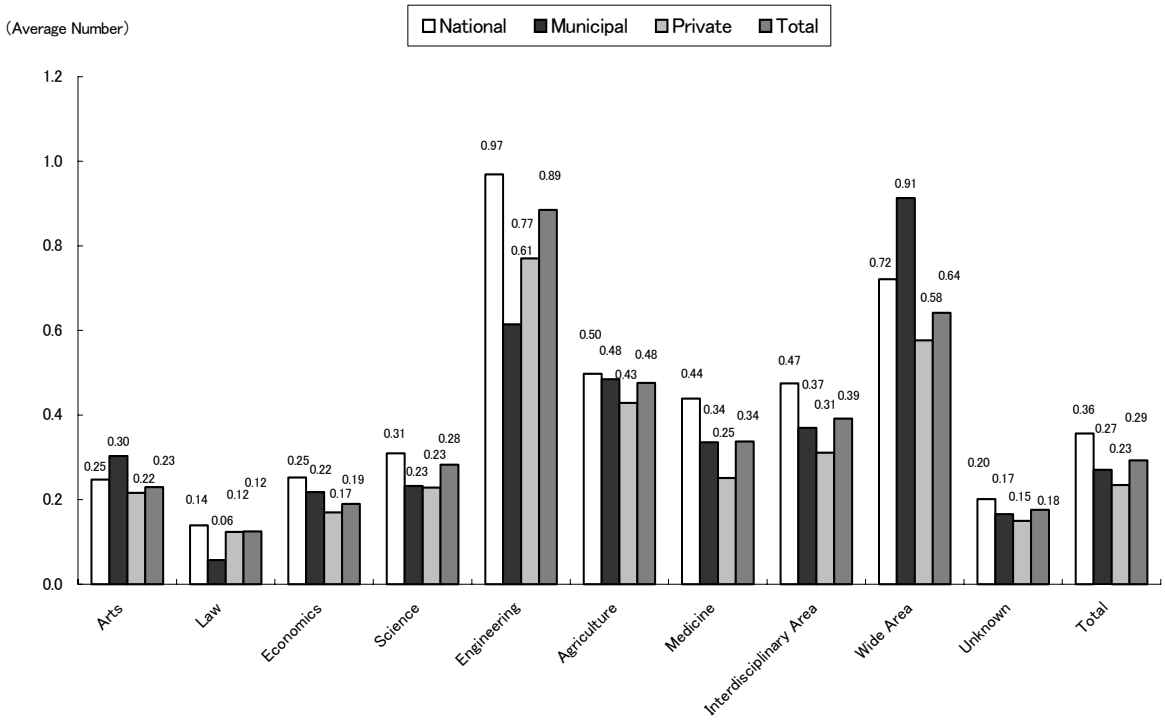

Figure 42　Average Number of Awards Received (Japanese) by Field of Specialization

8.2 Overseas Awards Received

Of the total number of researchers, 4,524 or 2.7% have received some sort of overseas academic award. The breakdown by institution governing authority is national institutions 3.2%, municipal institutions 2.8%, and private institutions 2.3%.

Broken down by field of specialization, the percentage of overseas award holders was highest in engineering (6.8%), followed in descending order by wide area (5.5%) and medicine (4.2%) (Figure 43).

The type of institution with the largest percentage of overseas award holders was private scientific research institutes at 2.9%. This was followed in descending order by universities (2.9%), inter-university research institutes (2.8%), government research institutes of the Ministry of Education, Science, Sports, and Culture (2.8%), junior colleges (1.3%), and colleges of technology (1.2%)(Figure 44).

The average number of overseas academic awards received by respondents overall was 0.041. The breakdown by institution governing authority is national institutions 0.046, municipal institutions 0.045, and private institutions 0.036. The breakdown by field of specialization puts engineering (0.100) in first place, followed by wide area (0.097), medicine (0.063) (Figure 45).

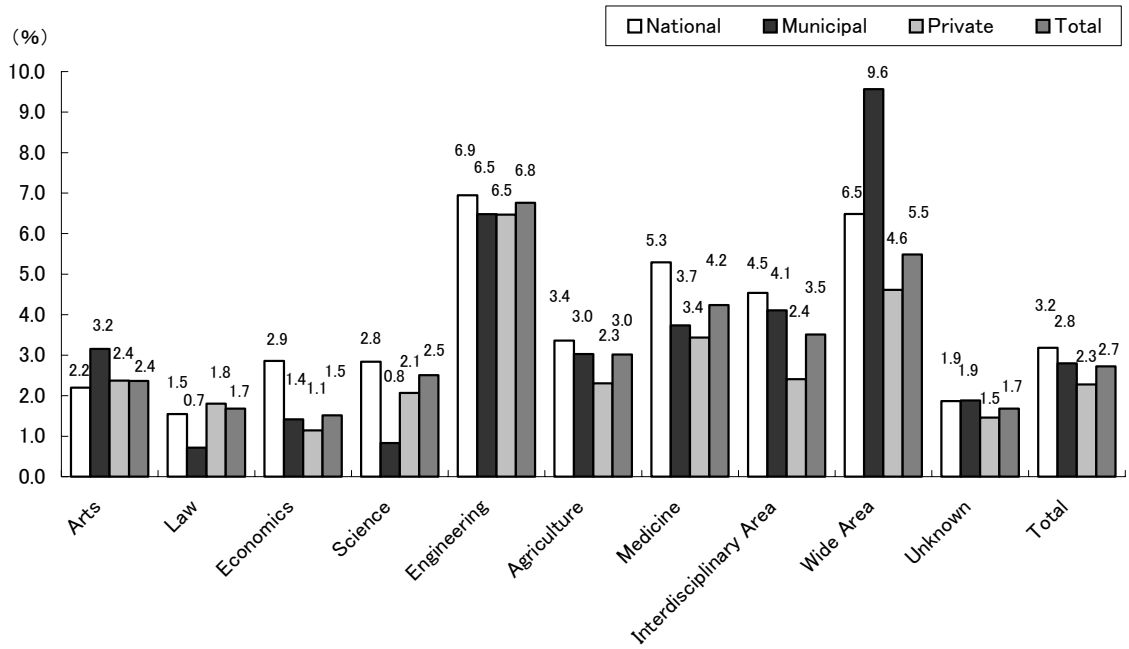

Figure 43 Ratio of Persons Who Have Received Awards (Overseas) by Field of Specialization

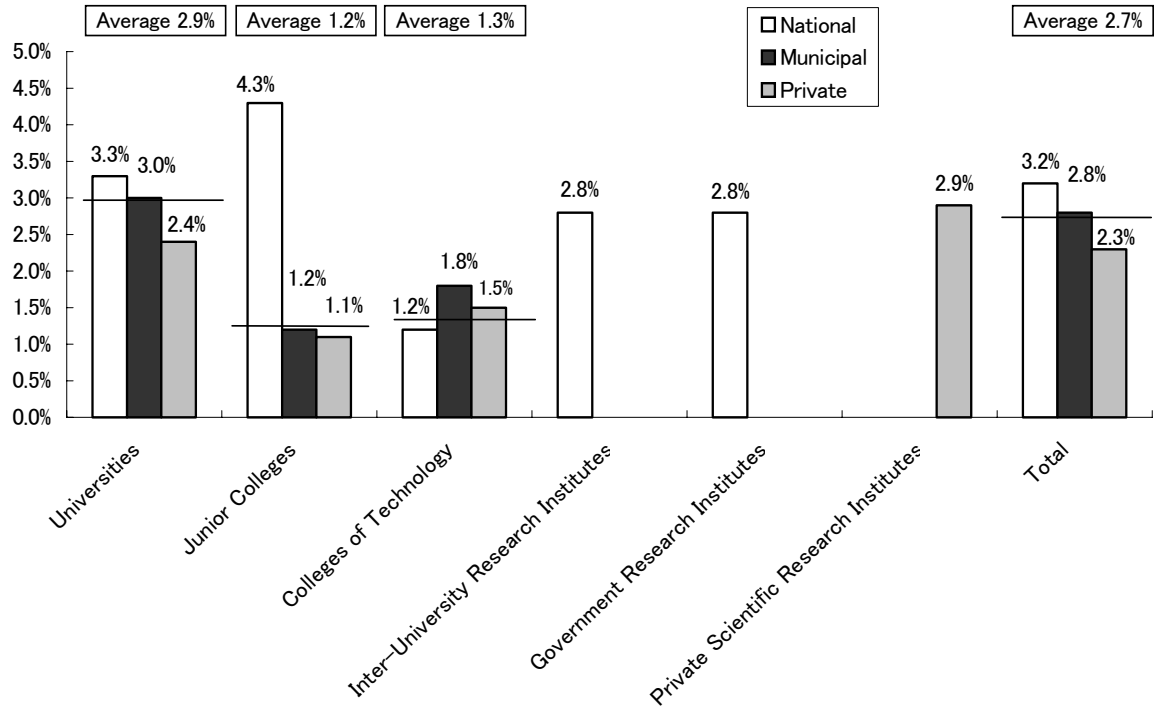

Figure 44　Ratio of Persons Who Have Received Awards (Overseas) by Institution Type

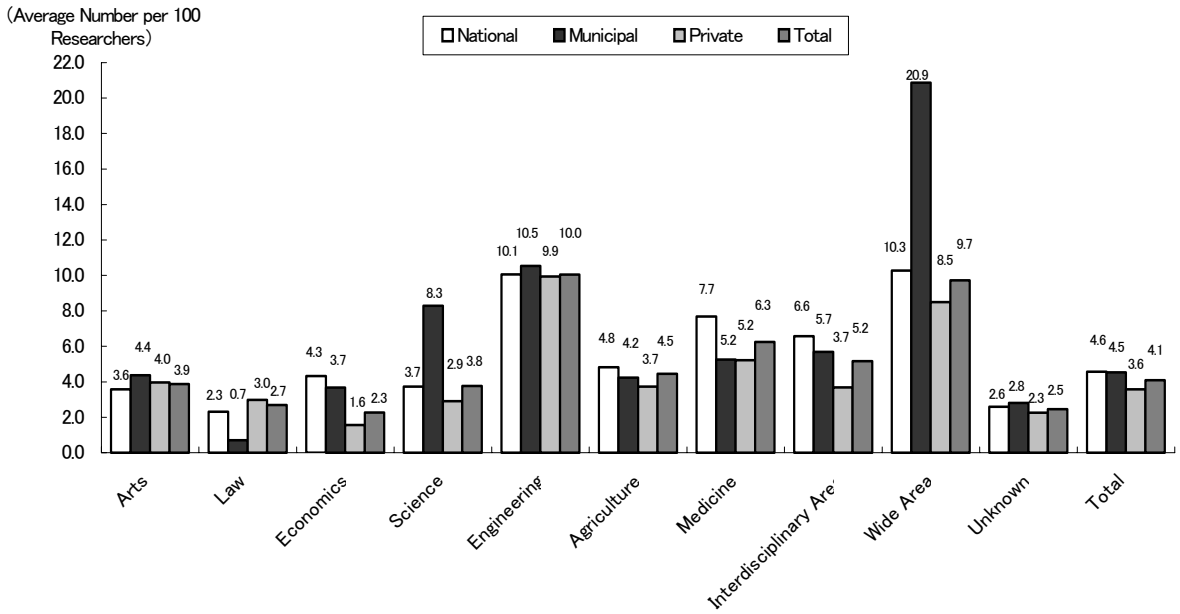

Figure 45　Average Number of Awards Received (Overseas) by Field of Specialization