Introduction

National Institute of Informatics 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. And in 2000 it was taken over by NII with reorganization of NACSIS.

From the 2003 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 2003 covers 1,445 institutions engaged in academic research, and some 176,278 scholars affiliated with 1,332 institutions engaged in academic research supplied most of the replies.

The present report is a statistical compilation of the survey data for fiscal 2002 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 NACSIS in 2001: " Academic Research Activities in Japan – A Report on the 1999 Academic Research Activities Survey –").

- the survey for fiscal 2000 (published by NACSIS in 2002: " Academic Research Activities in Japan – A Report on the 2000 Academic Research Activities Survey –").
- the survey for fiscal 2001 (published by NACSIS in 2003: " Academic Research Activities in Japan – A Report on the 2001 Academic Research Activities Survey –").
- the survey for fiscal 2002 (published by NACSIS in 2004: " Academic Research Activities in Japan – A Report on the 2002 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, 2003: 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 1,445 institutions subject to the survey, and valid responses were received from 1,332 institutions (92.2% response rate) and 176,278 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	690	689	158,164	99.9%
Junior Colleges	494	467	11,243	94.5%
Colleges of Technology	63	63	4,304	100.0%
Inter-university Research Institutes	19	7	1,150	36.8%
Government Research Institutes	24	15	469	62.5%
Private Scientific Research Institutes	155	91	948	58.7%
Total	1,445	1,332	176,278	92.2%

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 (12.3%) and medicine (12.2%) have the largest shares, together accounting for 24.5% of the total. These fields are followed, in descending order, by engineering (7.9%), interdisciplinary area (7.8%), science (5.2%), economics (3.2%), agriculture (2.6%), law (1.7%), and wide area (1.3%). Also, the ratio of researchers in the humanities and social sciences (researchers in arts, law, and economics), total 30,421 persons, to researchers in the natural sciences (researchers in science, engineering, agriculture, and medicine), total 49,409 persons, is 38:62.

A breakdown of researchers by the governing authority of the institutions they are affiliated with shows that 45.6% (80,310 persons) are at national institutions, 6.7% (11,729 persons) are at municipal institutions, and 47.8% (84,239 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 (66.8%), agriculture (62.3%) and engineering (61.0%). In contrast, a high proportion of researchers in the humanities and social sciences are affiliated with private institutions, such as economics (73.1%), law (67.6%), arts (67.1%), and wide area (62.4%).

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	4,666	719	986	4,639	6,028	2,266	7,623	5,034	597	16,967	49,525	
		Others	782	87	118	935	1,211	550	1,484	793	62	19,119	25,141	
		Total	5,448	806	1,104	5,574	7,239	2,816	9,107	5,827	659	36,086	74,666	88
	Municipal	Assistant and Above	956	140	334	444	566	253	1,740	629	106	2,946	8,114	
		Others	38	4	7	15	24	24	100	26	5	1,842	2,085	
		Total	994	144	341	459	590	277	1,840	655	111	4,788	10,199	76
	Private	Assistant and Above	11,382	1,855	3,614	2,269	4,191	994	8,994	4,861	1,016	19,743	58,919	
		Others	503	101	143	76	160	62	690	171	45	12,429	14,380	
		Total	11,885	1,956	3,757	2,345	4,351	1,056	9,684	5,032	1,061	32,172	73,299	526
	Total	Assistant and Above	17,004	2,714	4,934	7,352	10,785	3,513	18,357	10,524	1,719	39,656	116,558	
		Others	1,323	192	268	1,026	1,395	636	2,274	990	112	33,390	41,606	
		Total	18,327	2,906	5,202	8,378	12,180	4,149	20,631	11,514	1,831	73,046	158,164	690
Junior Colleges	National	Assistant and Above	24	1	4	0	11	1	17	29	14	29	130	
		Others	0	0	0	0	0	0	0	0	0	44	44	
		Total	24	1	4	0	11	1	17	29	14	73	174	5
	Municipal	Assistant and Above	188	12	38	16	24	83	229	118	21	348	1,077	
		Others	1	0	1	0	0	0	1	1	0	154	158	
		Total	189	12	39	16	24	83	230	119	21	502	1,235	46
	Private	Assistant and Above	2,634	92	324	157	299	249	547	1,453	311	3,169	9,235	
		Others	10	0	1	1	1	1	4	6	1	574	599	
		Total	2,644	92	325	158	300	250	551	1,459	312	3,743	9,834	443
	Total	Assistant and Above	2,846	105	366	173	334	333	793	1,600	346	3,546	10,442	
		Others	11	0	2	1	1	1	5	7	1	772	801	
		Total	2,857	105	368	174	335	334	798	1,607	347	4,318	11,243	494
Colleges of Technology	National	Assistant and Above	301	19	21	327	1,239	28	11	378	22	1,385	3,731	
		Others	4	0	0	1	16	0	0	1	0	98	120	
		Total	305	19	21	328	1,255	28	11	379	22	1,483	3,851	55
	Municipal	Assistant and Above	29	1	1	35	106	1	1	26	2	90	292	
		Others	0	0	0	0	1	0	0	0	0	2	3	
		Total	29	1	1	35	107	1	1	26	2	92	295	5
	Private	Assistant and Above	10	0	1	9	34	1	0	19	6	74	154	
		Others	0	0	0	0	0	0	0	0	0	4	4	
		Total	10	0	1	9	34	1	0	19	6	78	158	3
	Total	Assistant and Above	340	20	23	371	1,379	30	12	423	30	1,549	4,177	
		Others	4	0	0	1	17	0	0	1	0	104	127	
		Total	344	20	23	372	1,396	30	12	424	30	1,653	4,304	63
Inter-University Research Institutes		Assistant and Above	25	1	0	206	29	0	16	86	4	185	552	
		Others	0	0	0	26	5	0	0	17	0	550	598	
		Total	25	1	0	232	34	0	16	103	4	735	1,150	19
Government Research Institutes		Assistant and Above	147	1	0	40	9	7	4	44	5	156	413	
		Others	2	0	0	0	0	0	0	2	0	52	56	
		Total	149	1	0	40	9	7	4	46	5	208	469	24
Private Scientific Research Institutes		Assistant and Above	68	7	18	38	47	59	129	78	12	327	783	
		Others	0	0	0	3	2	0	0	5	0	155	165	
		Total	68	7	18	41	49	59	129	83	12	482	948	155
Total	National	Assistant and Above	5,163	741	1,011	5,212	7,316	2,302	7,671	5,571	642	18,722	54,351	
		Others	788	87	118	962	1,232	550	1,484	813	62	19,863	25,959	
		Total	5,951	828	1,129	6,174	8,548	2,852	9,155	6,384	704	38,585	80,310	191
	Municipal	Assistant and Above	1,173	153	373	495	696	337	1,970	773	129	3,384	9,483	
		Others	39	4	8	15	25	24	101	27	5	1,998	2,246	
		Total	1,212	157	381	510	721	361	2,071	800	134	5,382	11,729	127
	Private	Assistant and Above	14,094	1,954	3,957	2,473	4,571	1,303	9,670	6,411	1,345	23,313	69,091	
		Others	513	101	144	80	163	63	694	182	46	13,162	15,148	
		Total	14,607	2,055	4,101	2,553	4,734	1,366	10,364	6,593	1,391	36,475	84,239	1,127
	Total	Assistant and Above	20,430	2,848	5,341	8,180	12,583	3,942	19,311	12,755	2,116	45,419	132,925	
		Others	1,340	192	270	1,057	1,420	637	2,279	1,022	113	35,023	43,353	
		Total	21,770	3,040	5,611	9,237	14,003	4,579	21,590	13,777	2,229	80,442	176,278	1,445

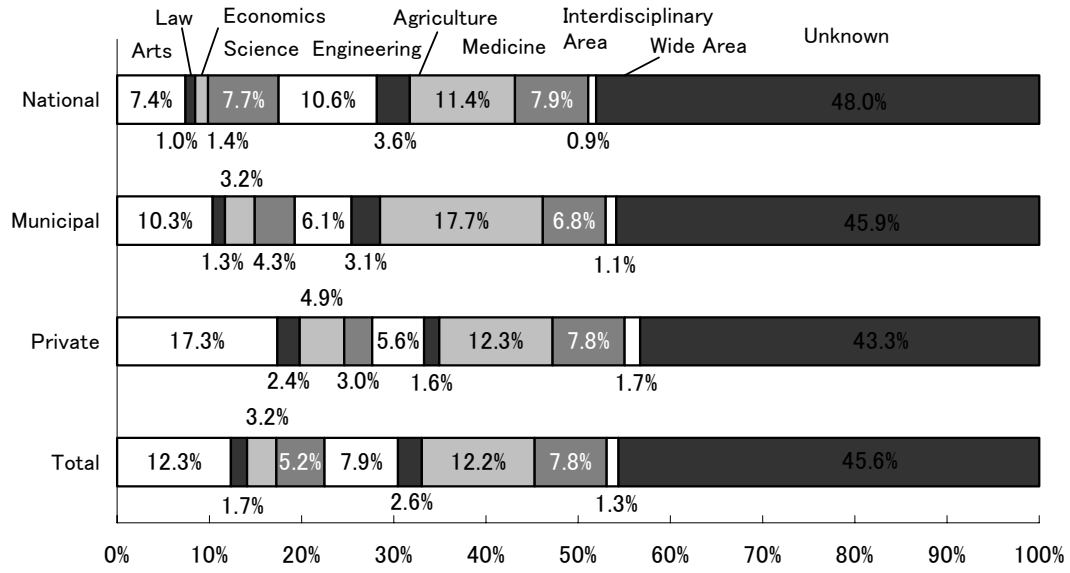

Figure 1　Composition of Researchers by Institution Governing Authority / by Field of Specialization

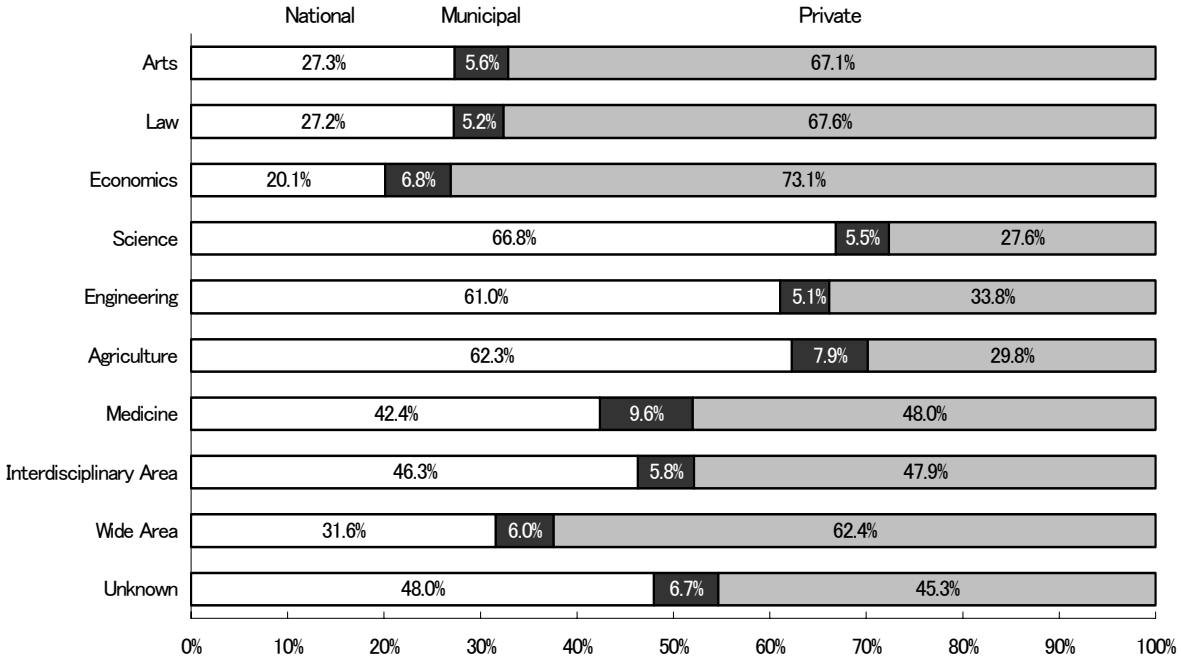

Figure 2　Composition of Researchers by Field of Specialization / by Institution Governing Authority

2.2 Number of Researchers by Institution Type

Broken down by institution type, the proportion of researchers affiliated with universities account for 89.7% of the total (158,164 persons), those affiliated with junior colleges for 6.4% (11,243 persons), those affiliated with colleges of technology for 2.4% (4,304 persons), those affiliated with inter-university research institutes for 0.7% (1,150 persons), those affiliated with private scientific research institutes for 0.5% (948 persons), and those affiliated with government research institutes of the Ministry of Education, Science, Sports, and Culture for 0.3% (469 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 47.2%, municipal 6.4%, and private 46.3%; that for junior colleges is national 1.5%, municipal 11.0%, and private 87.5%; and that for colleges of technology is national 89.5%, municipal 6.9%, and private 3.7%.

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%	0.1%	0.3%	0.4%
	Professor	30.3%	23.9%	26.9%	37.4%
	Associate Professor	18.9%	19.5%	20.5%	18.1%
	Lecturer	9.0%	5.2%	12.0%	12.5%
	Research Assistant	13.9%	16.5%	18.5%	10.5%
	Others	1.2%	1.0%	1.4%	1.5%
	Graduate Student	10.2%	15.8%	5.5%	5.2%
	Part-time Researcher	0.6%	1.2%	0.2%	0.1%
	Unknown	15.5%	16.7%	14.7%	14.4%
	Total	100.0%	100.0%	100.0%	100.0%
Junior Colleges	President / Vice President	1.4%	1.7%	1.1%	1.5%
	Professor	37.1%	32.2%	29.1%	38.1%
	Associate Professor	26.7%	21.8%	25.8%	26.9%
	Lecturer	20.5%	6.9%	18.8%	21.0%
	Research Assistant	6.2%	12.1%	12.1%	5.3%
	Others	1.0%	0.0%	0.2%	1.1%
	Graduate Student	0.1%	0.0%	0.2%	0.1%
	Part-time Researcher	0.0%	0.0%	0.0%	0.0%
	Unknown	7.0%	25.3%	12.6%	6.0%
	Total	100.0%	100.0%	100.0%	100.0%

2.3 Age

The average age of all the researchers is 46.7. Broken down by field of specialization, the average age is highest in economics (51.3), followed in descending order by wide area (51.3), arts (51.0), and law (49.9). 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 (48.1), interdisciplinary area (48.0), agriculture (47.7), and science (47.5). The field with the lowest average age was medicine, at 45.5. 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 47.33 and that among women is 43.91 (Figure 4).

Broken down by institution type, the average age of researchers at inter-university research institutes is the lowest at 43.4. This was followed, in ascending order, by government research institutes of the Ministry of Education, Science, Sports, and Culture; universities; colleges of technology; and private scientific research institutes. The average age of researchers is highest (51.3) 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 57.2, among whom that among professors at government research institutes of the Ministry of Education, Science, Sports, and Culture is the lowest, at 52.0, and that among professors at private scientific research institutes is the highest, at 69.1. Overall, the average age of associate professors is 46.2, that of lecturers 42.5, and that of research assistant 37.8. 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 63.3 at national institutions, 66.2 at municipal institutions, and 66.9 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 31.9 (Table 4).

The age composition of researchers overall is as follows: those aged 41 to 50 are the largest group, at 26.1% of the total; they are followed by the 51 to 60 group (26.1%), the 31 to 40 group (24.0%), the 61 to 70 group (13.1%), the 30 and below group (9.7%), and the 71 and above group (1.0%).

The breakdown by field of specialization shows that 33.6% of researchers in medicine, 31.9% in agriculture, and 31.6% in science are 40 or younger. The proportion of younger researchers is high in these fields. In contrast, fields of specialization where the percentage of researchers who are 40 or younger is small include arts (18.5%) , wide area (19.7%), economics (20.5%) (Figure 5). Generally speaking this shows that the proportion of older researchers is higher in the humanities and social sciences than in the natural sciences.

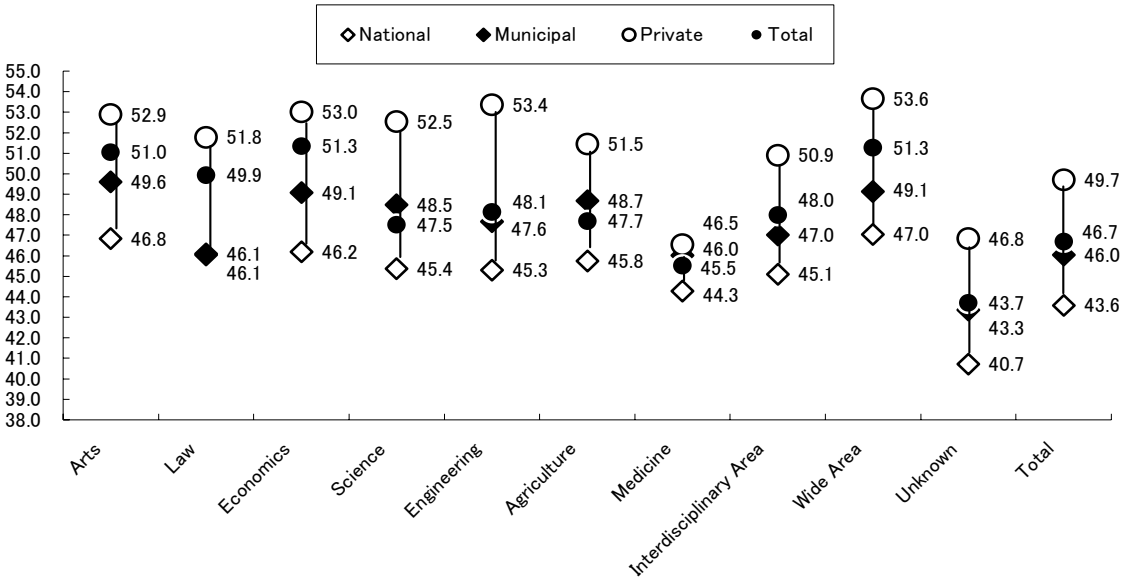

Figure 3　Average Age of Researchers by Field of Specialization

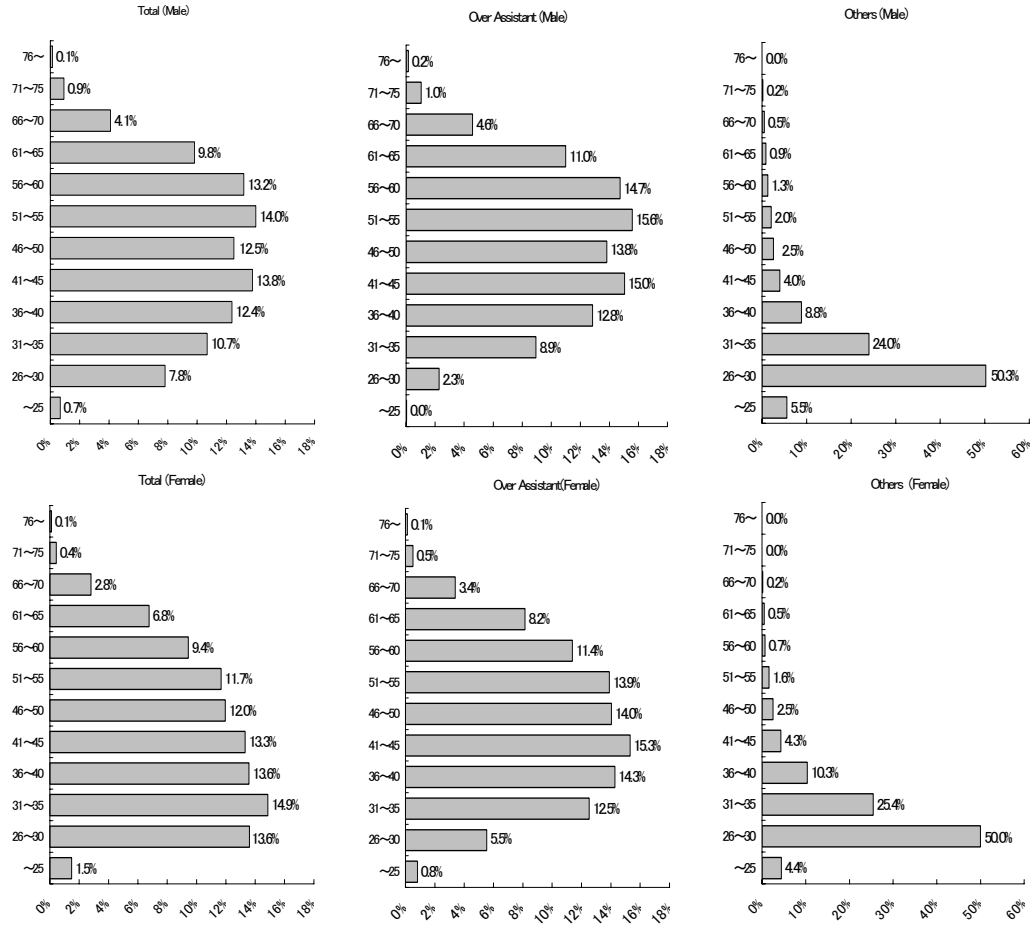

Figure 4　Age Composition of Researchers by Gender

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	55.2	44.6	42.0	38.3	63.3	31.3	43.4
	Municipal	55.9	45.8	42.2	37.6	65.2	36.9	45.8
	Private	58.4	47.6	42.8	37.4	66.8	36.6	49.4
	Total	57.1	46.0	42.5	37.9	65.9	31.8	46.3
Junior Colleges	National	56.5	48.7	40.7	34.5	57.5		49.2
	Municipal	56.6	47.3	41.4	37.3	68.6		48.0
	Private	59.0	49.7	43.6	35.1	67.0	54.0	51.7
	Total	58.7	49.4	43.3	35.6	67.0	54.0	51.3
Colleges of Technology	National	55.8	43.9	36.0	35.4	63.3		46.9
	Municipal	55.3	40.2	33.7	31.3			46.7
	Private	57.3	50.9	38.5	26.9	63.0		49.1
	Total	55.8	43.9	36.0	35.2	63.3		47.0
Inter-University Research Institutes		54.6	46.0	33.0	39.0	73.0	32.0	43.4
Government Research Institutes		52.0						46.2
Private Scientific Research Institutes		69.1	50.0	55.7	39.3	68.0	36.2	47.9
Total	National	55.2	44.6	41.4	38.2	63.3	31.4	43.6
	Municipal	55.9	45.8	41.9	37.6	66.2	36.9	46.0
	Private	58.5	47.9	42.9	37.2	66.9	36.7	49.7
	Total	57.2	46.2	42.5	37.8	66.2	31.9	46.7

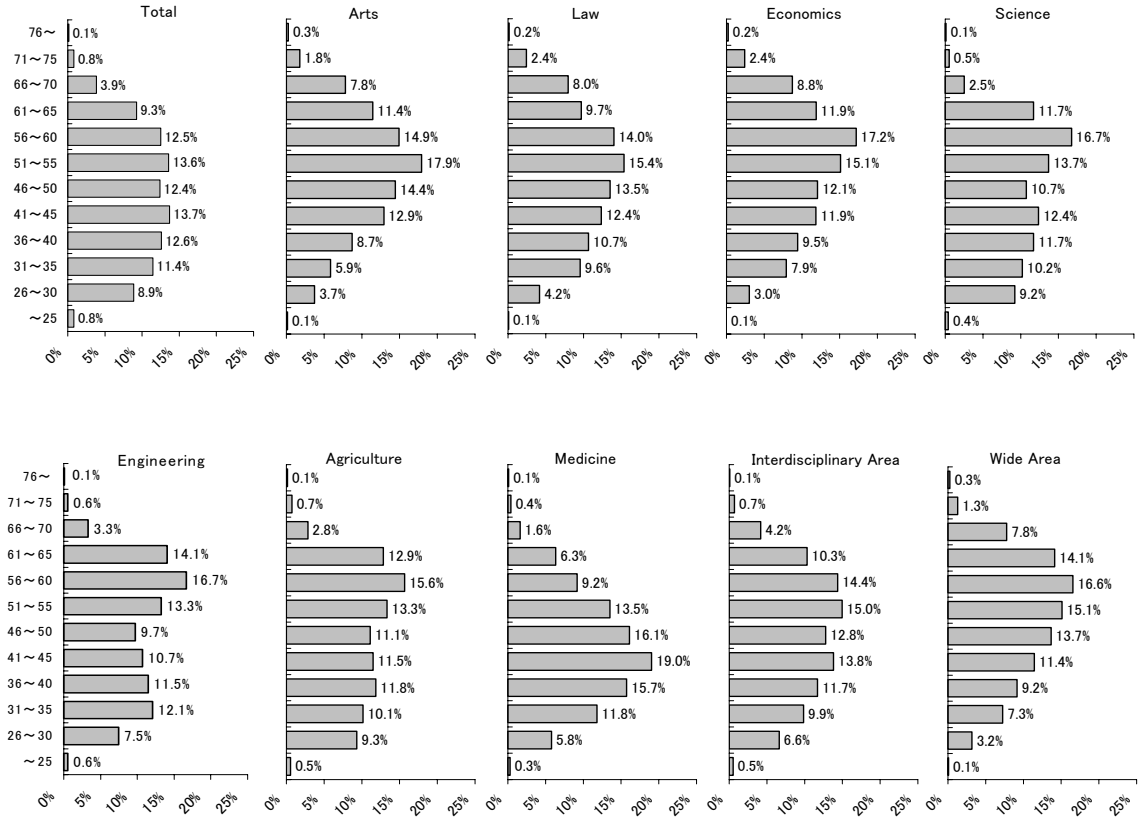

Figure 5　Age Composition of Researchers by Field of Specialization

2.4 Gender

Among all the researchers, 82.1% (123,208 persons) are men and 17.9% (26,921 persons) are women.

Broken down by field of specialization, the proportion of women is relatively high in four fields: arts (26.6%), wide area (25.3%), medicine (21.2%), and interdisciplinary area (21.1%). In contrast, the proportion of women is low in the fields of engineering (3.5%), science (6.7%), economics (8.0%), agriculture (11.0%), and law (12.2%). 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 45.7% 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 4.4% 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 assistants, lecturers, university graduates, and part-time researchers for all institution governing authority classifications (Figure 8). This is thought to be due to the fact that overall women tend to be proportionally more numerous at the lower age levels (Figure 4).

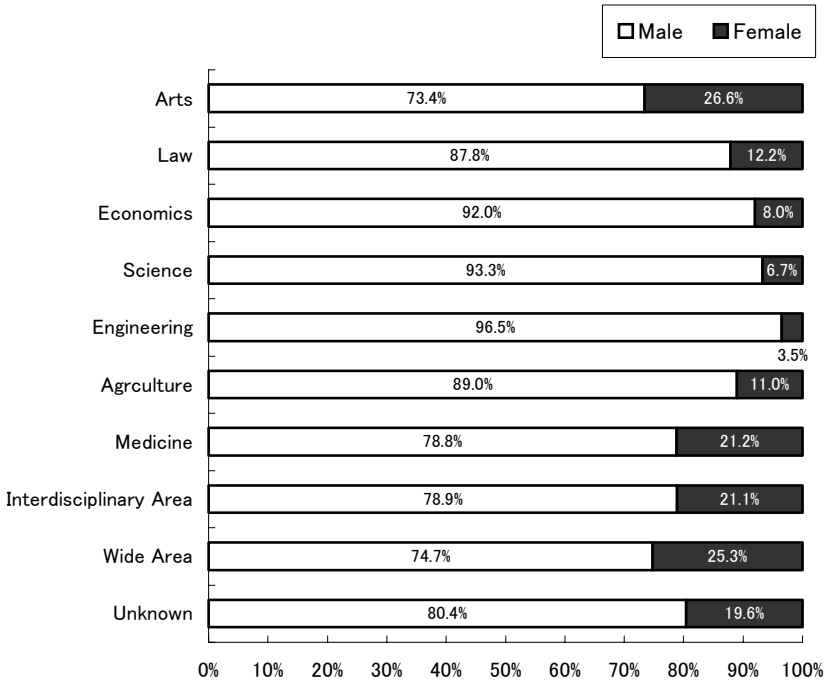

Figure 6　Gender Composition of Researchers by Field of Specialization

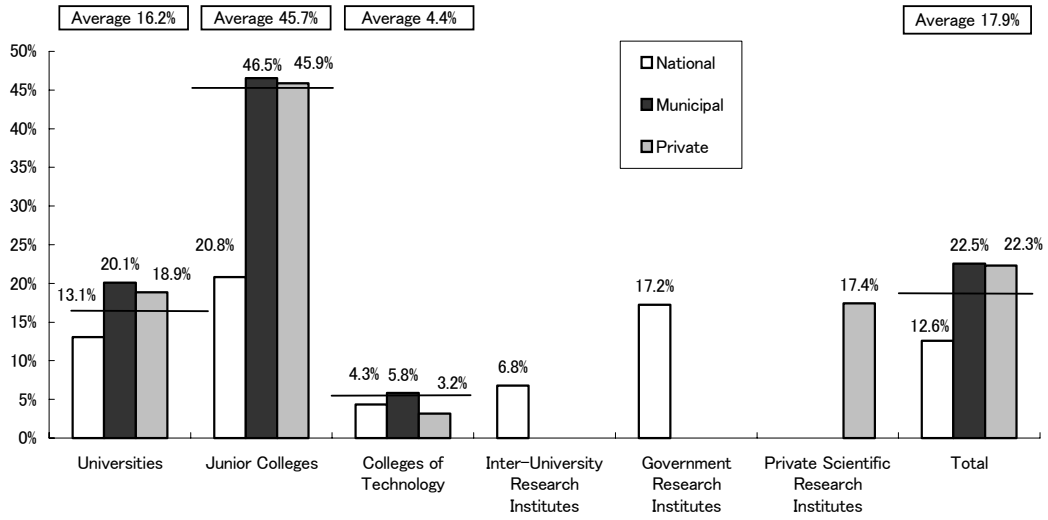

Figure 7　Ratio of Female Researchers by Institution Type

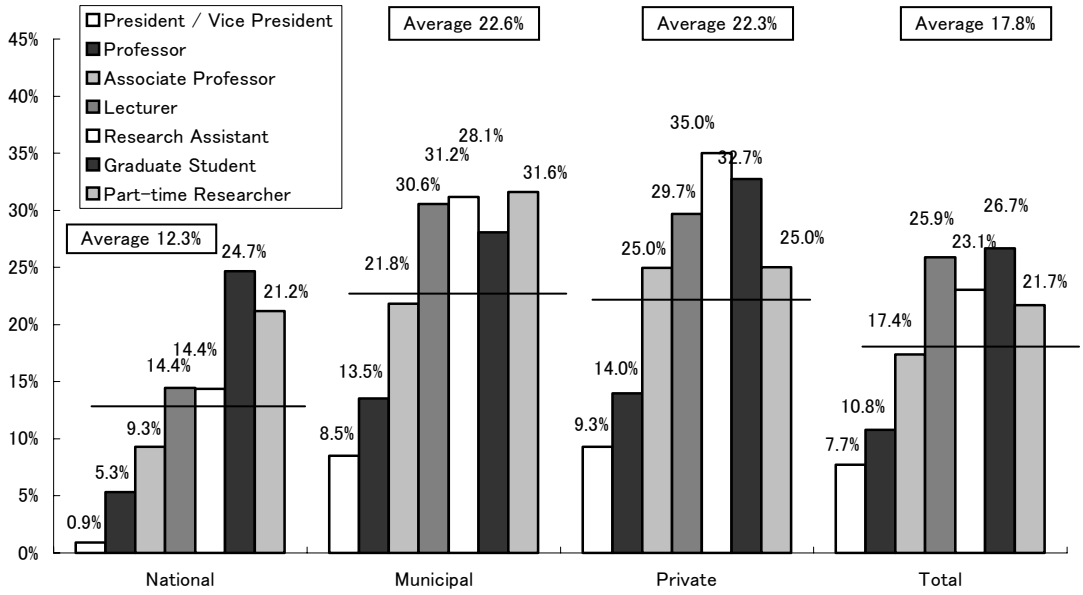

Figure 8　Ratio of Female Researchers by Professional Title

2.5 Non-Japanese Names

Of all the researchers, 4,154 or 2.4% 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 (4.0%), economics (2.9%), wide area (2.9%), followed by and engineering (2.8%), agriculture (2.7%), and law (2.1%) (Figure 9). Note that the 871 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 13.6% 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).

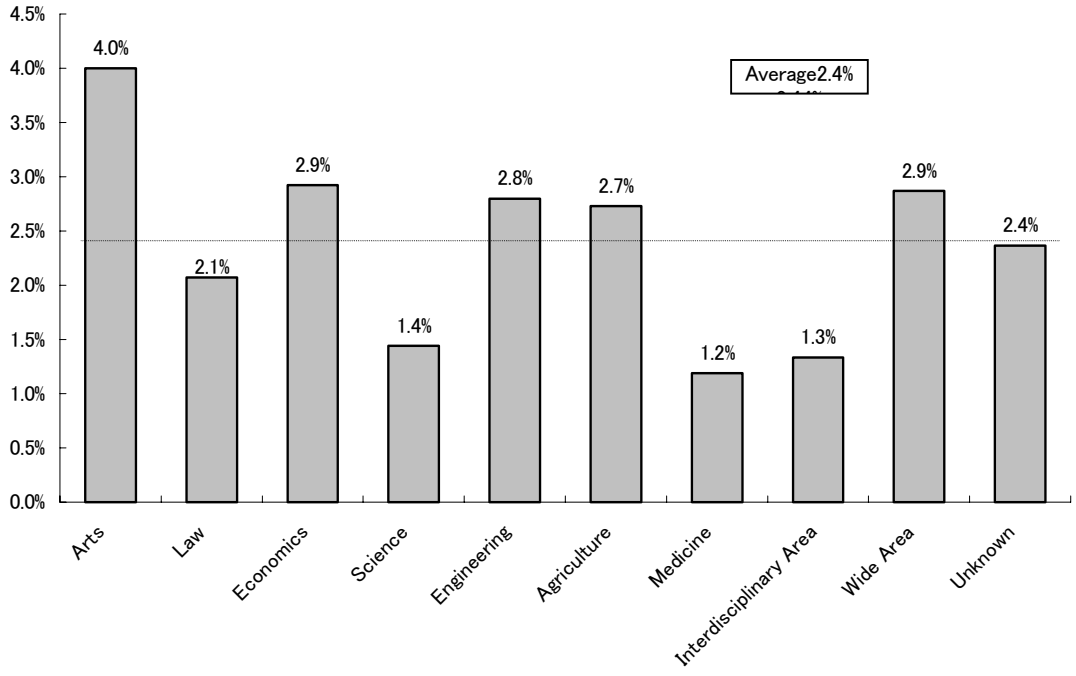

Figure 9　Ratio of Researchers with Non-Japanese Names by Field of Specialization

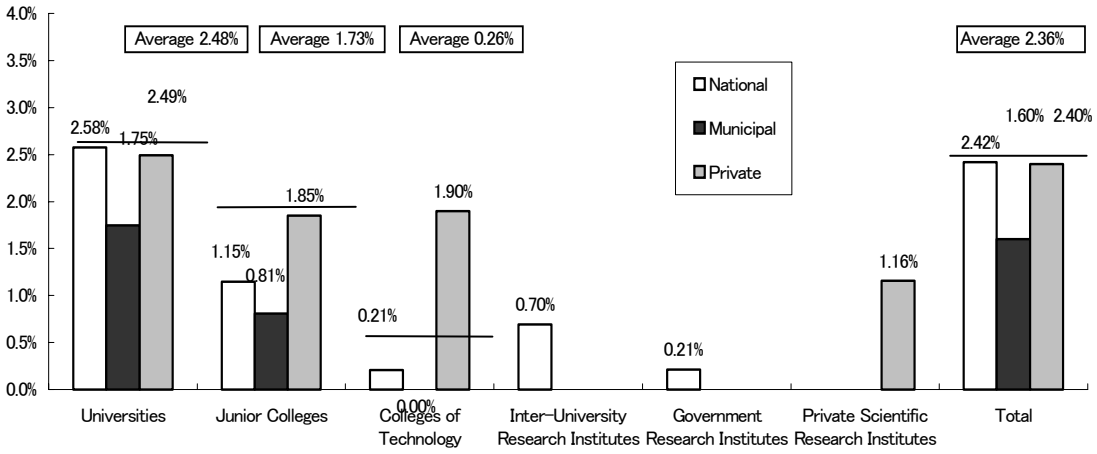

Figure 10　Ratio of Researchers with Non-Japanese Names by Institution Type

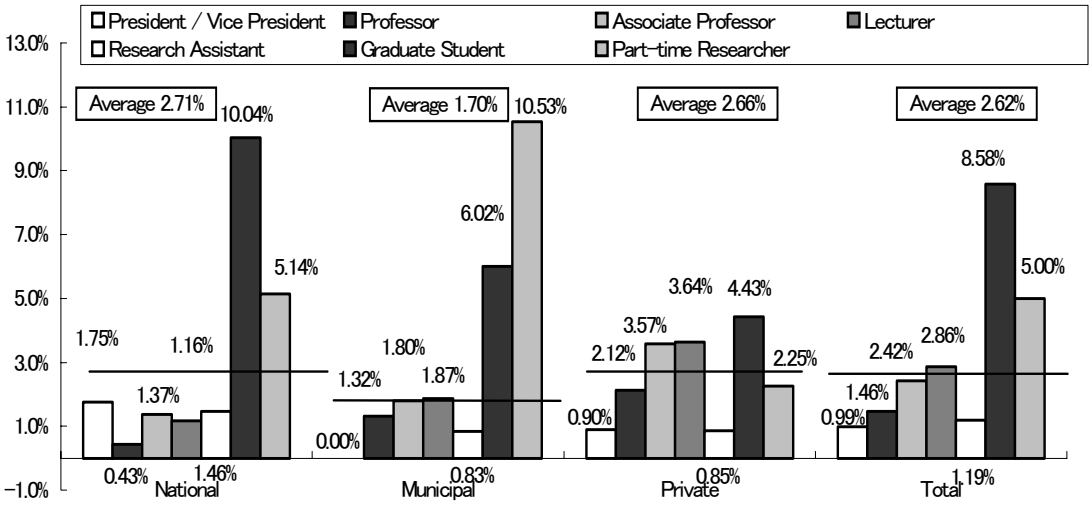

Figure 11　Ratio of Researchers with Non-Japanese Names by Professional Title

3. Academic Background

3.1 Last Degree Course Completed

Regarding the last degree course completed by the researchers, 111,319 persons (63.1%) hold a graduate degree. Of these, 64,712 (36.7% of the total) hold a doctorate degree and 44,131 (25.0% of the total) hold a master's degree. Also, 32,236 (18.3% of the total) have completed only an undergraduate degree and 32,723 (18.6% 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 90.3%, followed by economics, at 87.5%. Next come law and arts, at 86.9% and 84.9% respectively. These are followed in descending order by engineering (81.5%), agriculture (81.3%), interdisciplinary area (73.1%), and wide area (61.3%). Medicine is the lowest, at 50.3% (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 78.3% respectively. These are followed in descending order by colleges of technology (72.8%), universities (63.9%), junior colleges (51.4%), private scientific research institutes (50.2%), and inter-university research institutes (39.7%) (Figure 13).

A look at the ratio of researchers graduated from institutions in Japan and overseas institutions shows that 6,677 of the respondents, or 3.8% of the total, are graduates of overseas institutions (Table 5). By field of specialization, their proportions are largest in arts (10.4%), wide area (9.1%), law (6.9%), and economics (6.9%). By type of institution, graduates of overseas institutions are comparatively numerous at junior colleges (3.9%) and universities (3.9%), 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	21,770	10,130	8,072	279	18,481	2,682	607	18,783	86.3%	2,262	10.4%
Law	3,040	1,845	756	42	2,643	345	52	2,735	90.0%	209	6.9%
Economics	5,611	3,654	1,192	63	4,909	620	82	5,041	89.8%	387	6.9%
Science	9,237	5,528	2,745	68	8,341	678	218	8,662	93.8%	229	2.5%
Engineering	14,003	5,881	5,415	113	11,409	2,172	422	13,171	94.1%	495	3.5%
Agriculture	4,579	1,942	1,723	57	3,722	770	87	4,360	95.2%	108	2.4%
Medicine	21,590	7,699	2,874	290	10,863	9,906	821	20,388	94.4%	380	1.8%
Interdisciplinary Area	13,777	5,324	4,578	163	10,065	3,230	482	12,984	94.2%	430	3.1%
Wide Area	2,229	537	703	126	1,366	695	168	1,935	86.8%	202	9.1%
Unknown	80,442	22,172	16,073	1,275	39,520	11,138	29,784	49,053	61.0%	1,975	2.5%
Total	176,278	64,712	44,131	2,476	111,319	32,236	32,723	137,112	77.8%	6,677	3.8%

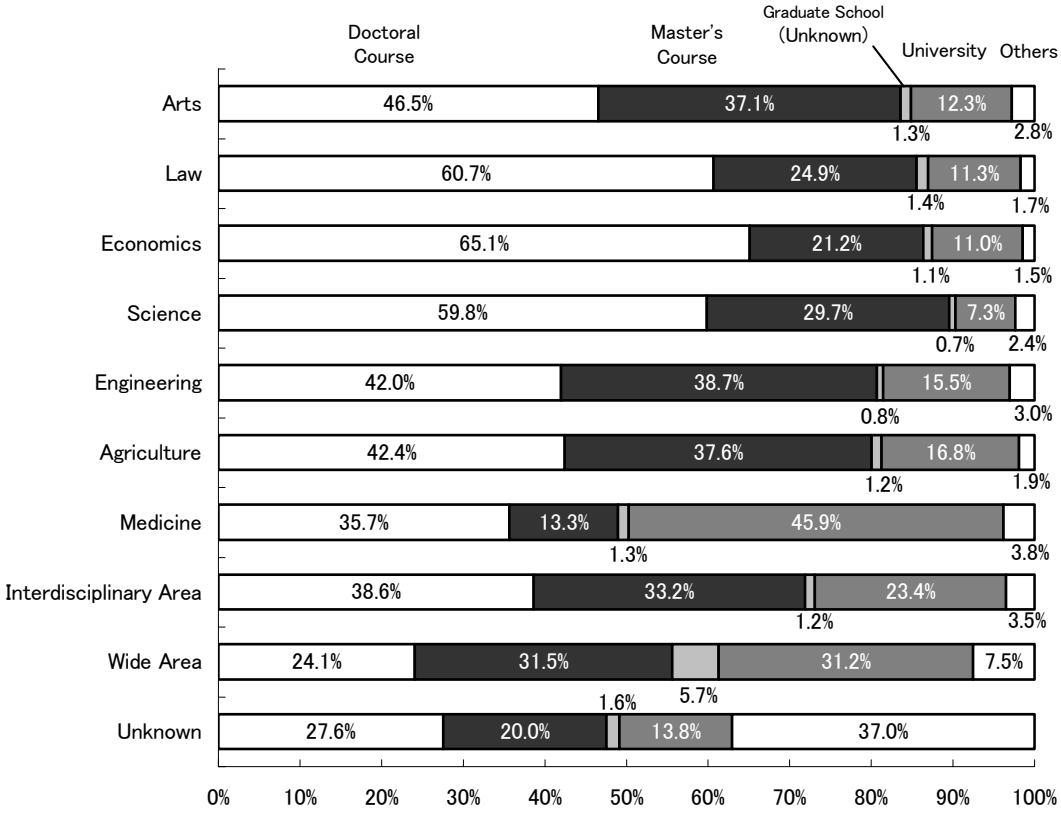

Figure 12　Last Degree Course Completed by Field of Specialization

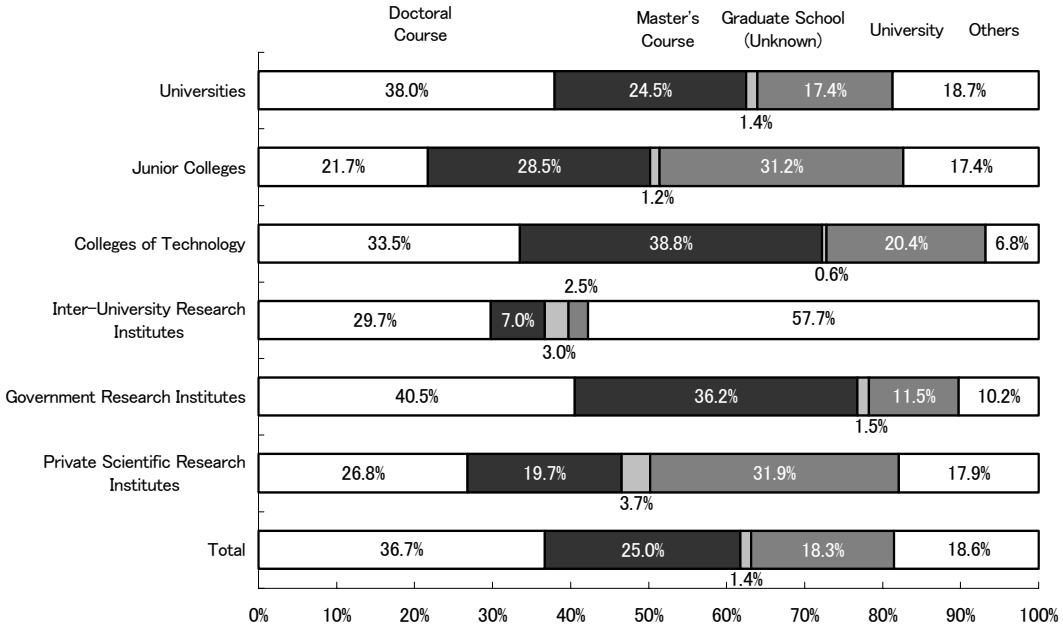

Figure 13　Last Degree Course Completed by Institution Type

3.2 Researchers with Doctorate Degrees

The number of the researchers with doctorate degrees is 77,697, which amounts to 44.1% of the total. Broken down by type degree, doctors of engineering are the most numerous, at 26.5%. Persons follow them in descending order with doctorates in medicine (23.8%), 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 (79.4%), agriculture (74.5%), engineering (73.6%), medicine (68.9%), and interdisciplinary area (50.8%). In contrast, the proportion of researchers with doctorate degrees is extremely low in the fields of arts, law, and economics, being 20.3%, 25.8%, and 33.2%, respectively (Figure 15).

Broken down by institution type, the proportion of researchers with doctorate degrees is highest at colleges of technology, at 51.3%. This is followed in descending order by universities (44.7%), inter-university research institutes (44.5%), and private scientific research institutes (42.5%). The proportion is comparatively low at government research institutes of the Ministry of Education, Science, Sports, and Culture (28.1%), and junior colleges (15.8%). Note that researchers with doctorate degrees account for the majority, 49.3%, 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 64.7%. These are followed in descending order by associate professors (60.6%), lecturers (60.2%), professors (59.5%), and research assistants (56.4%). Also, the proportion of researchers with doctorate degrees is highest of all among part-time researchers at 71.4% (Figure 17, Table 6).

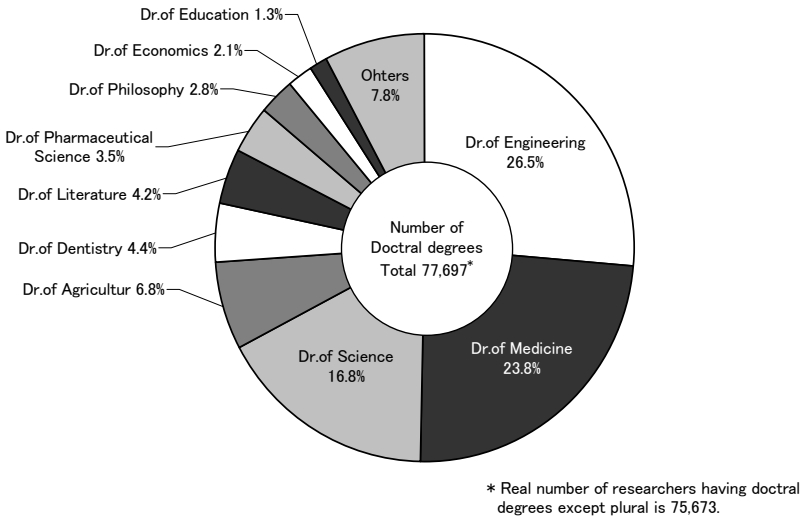

Figure 14　Researchers with Doctorate Degrees

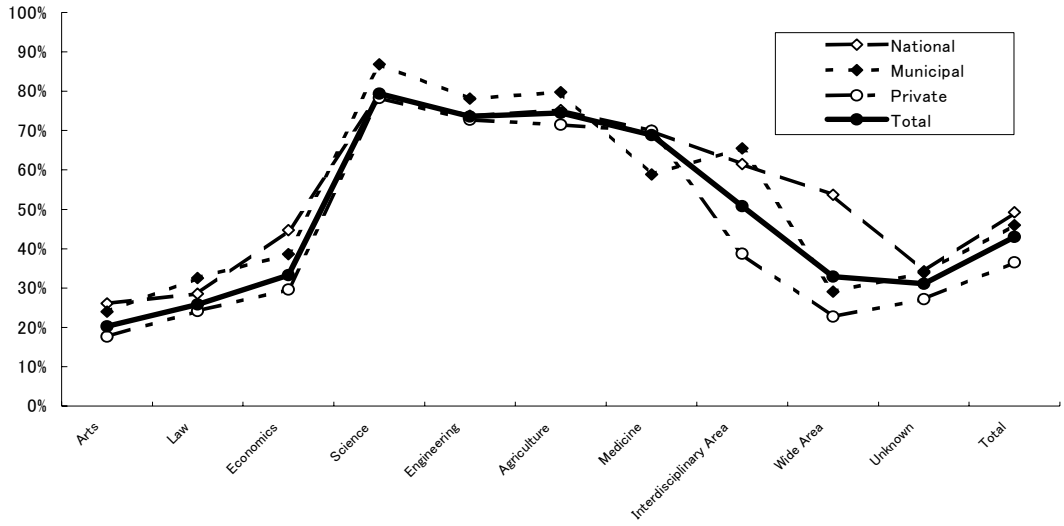

Figure 15　Ratio of Researchers with Doctorate Degrees by Field of Specialization / by Institution Governing Authority

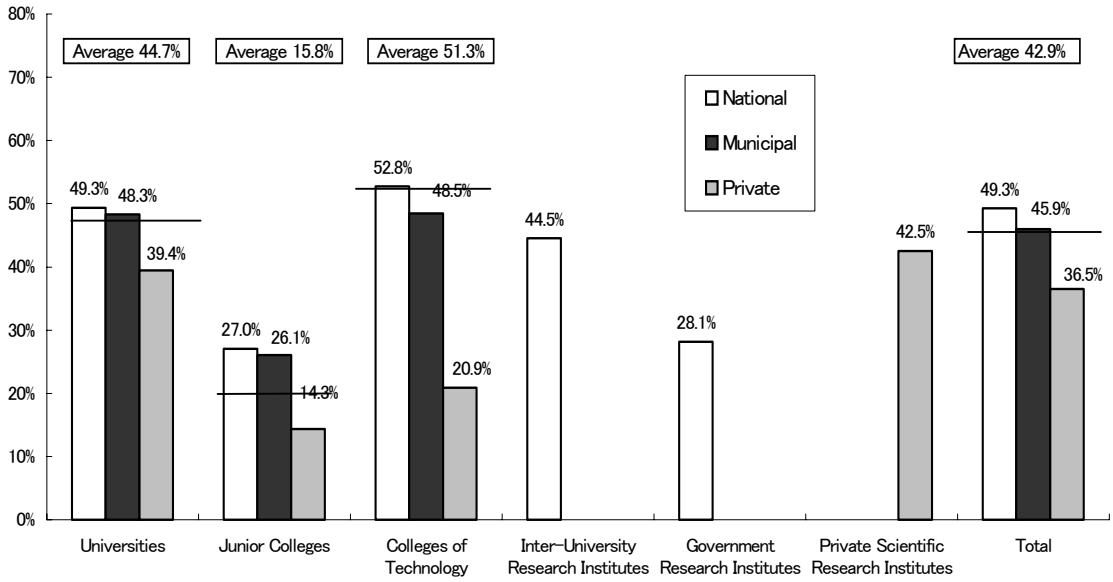

Figure 16　Ratio of Researchers with Doctorate Degrees by Institution Type　/ by Institution Governing Authority

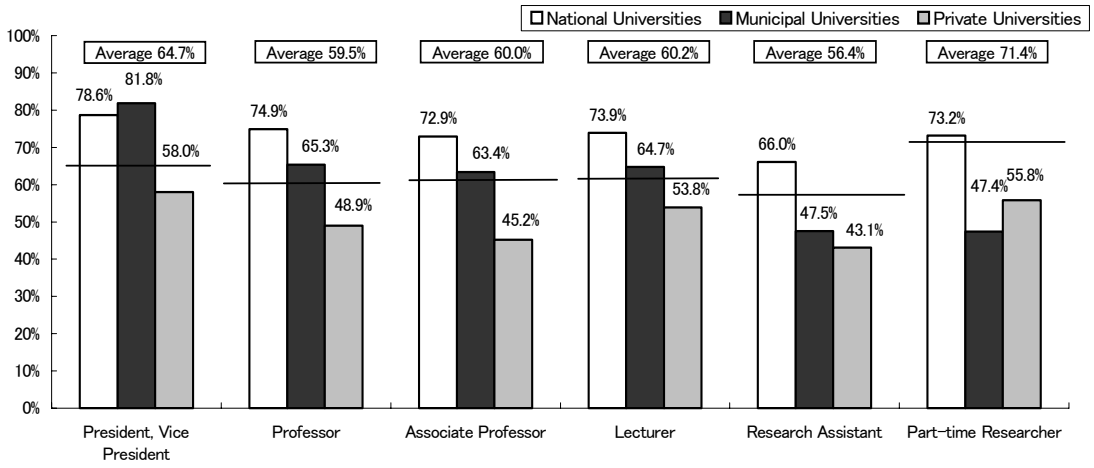

Figure 17　Ratio of University Researchers with Doctorate Degrees by Professional Title

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	103	81	78.6%
	Professor	17,851	13,363	74.9%
	Associate Professor	14,594	10,636	72.9%
	Lecturer	3,909	2,889	73.9%
	Research Assistant	12,322	8,138	66.0%
	Part-time Researcher	928	679	73.2%
Municipal Universities	President, Vice President	33	27	81.8%
	Professor	2,744	1,791	65.3%
	Associate Professor	2,087	1,323	63.4%
	Lecturer	1,222	791	64.7%
	Research Assistant	1,885	895	47.5%
	Part-time Researcher	19	9	47.4%
Private Universities	President, Vice President	300	174	58.0%
	Professor	27,393	13,397	48.9%
	Associate Professor	13,263	5,998	45.2%
	Lecturer	9,172	4,937	53.8%
	Research Assistant	7,703	3,320	43.1%
	Part-time Researcher	77	43	55.8%
Total	President, Vice President	436	282	64.7%
	Professor	47,988	28,551	59.5%
	Associate Professor	29,944	17,957	60.0%
	Lecturer	14,303	8,617	60.2%
	Research Assistant	21,910	12,353	56.4%
	Part-time Researcher	1,024	731	71.4%

4. Current Research Topics

The survey subjects were asked what research topics they were currently working on, and a total of 247,164 responses were received. This works out to an average of 1.40 research topics per researcher. The averages per researcher at national, municipal, and private institutions were 1.43, 1.47, and 1.37 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 (24.7%) and international collaboration (11.5%) 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 65.2%, 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).

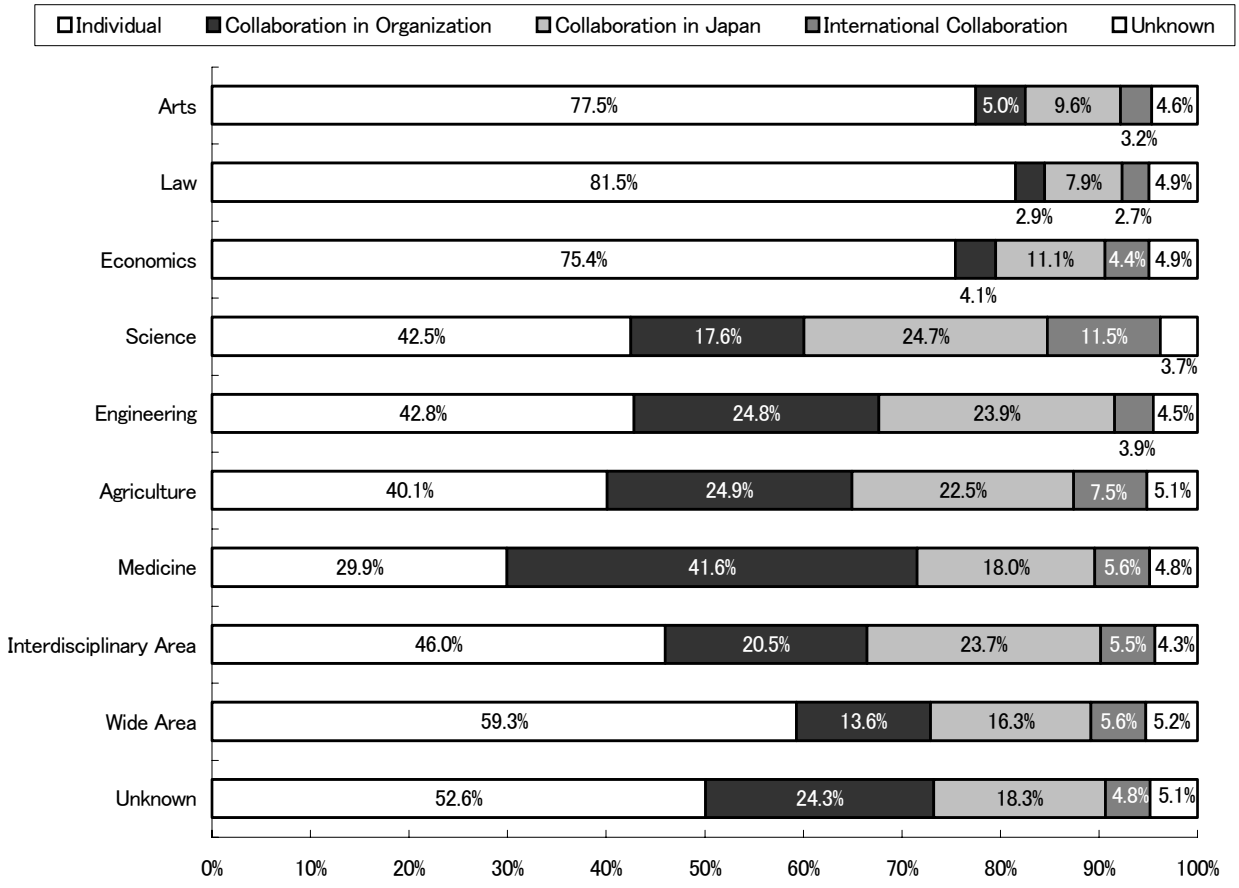

Figure 18　Research Topics and Status of Research by Field of Research

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 10,697, or 6.1%. The figures broken down by institution governing authority were national institutions 6.7%, municipal institutions 6.1%, and private institutions 5.4% (Table 7).

Broken down by field of specialization, the figures were as follows, in descending order: agriculture (10.8%), science (9.7%), arts (9.1%), law (8.9%), Wide area (7.0%), economics (7.4%), interdisciplinary area (6.8%), and engineering (6.4%). Medicine had the lowest percentage at 4.6%. 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 government research institutes of the Ministry of Education, Science, Sports, and Culture (7.9%) and universities (6.3%) have the highest percentages. These are followed in descending order by colleges of technology (4.6%), private scientific research institutes (3.7%), junior colleges (3.6%), and inter-university research institutes (3.0%). 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 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	600	115	1,256	1,971
	Ratio	10.1%	9.5%	8.6%	9.1%
Law	No. of Researchers	71	15	186	272
	Ratio	8.6%	9.6%	9.1%	8.9%
Economics	No. of Researchers	105	38	274	417
	Ratio	9.3%	10.0%	6.7%	7.4%
Science	No. of Researchers	635	65	196	896
	Ratio	10.3%	12.7%	7.7%	9.7%
Engineering	No. of Researchers	565	52	286	903
	Ratio	6.6%	7.2%	6.0%	6.4%
Agriculture	No. of Researchers	356	35	102	493
	Ratio	12.5%	9.7%	7.5%	10.8%
Medicine	No. of Researchers	530	87	379	996
	Ratio	5.8%	4.2%	3.7%	4.6%
Interdisciplinary Area	No. of Researchers	496	62	377	935
	Ratio	7.8%	7.8%	5.7%	6.8%
Wide Area	No. of Researchers	52	9	95	156
	Ratio	7.4%	6.7%	6.8%	7.0%
Unknown	No. of Researchers	1,989	240	1,429	3,658
	Ratio	5.2%	4.5%	3.9%	4.5%
Total	No. of Researchers	5,399	718	4,580	10,697
	Ratio	6.7%	6.1%	5.4%	6.1%

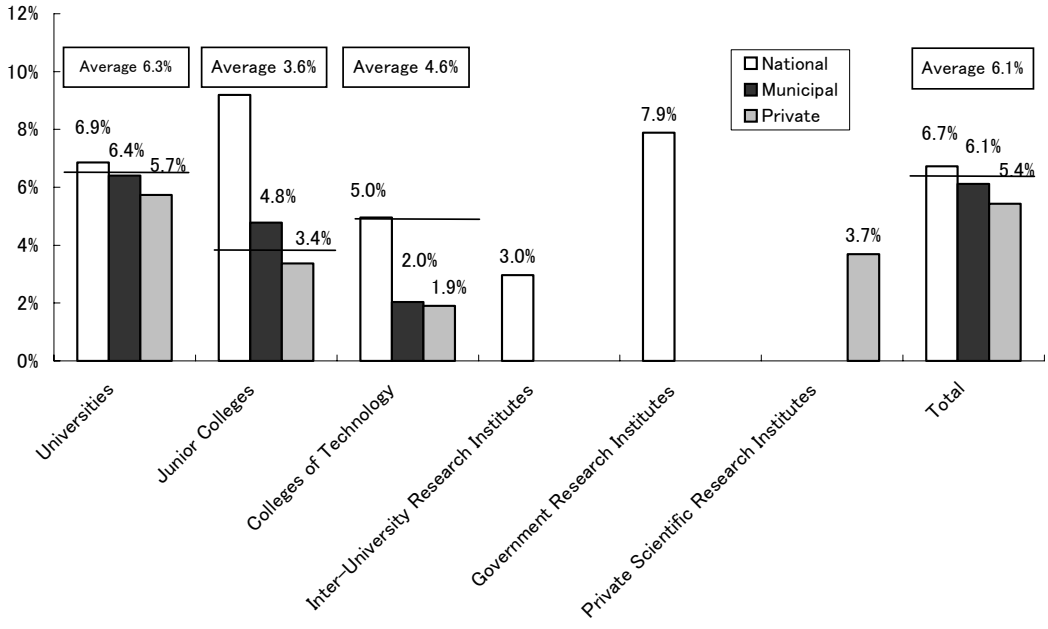

Figure 19　Ratio of Researchers Who Have Traveled Abroad by Institution Type / by Institution Governing Authority

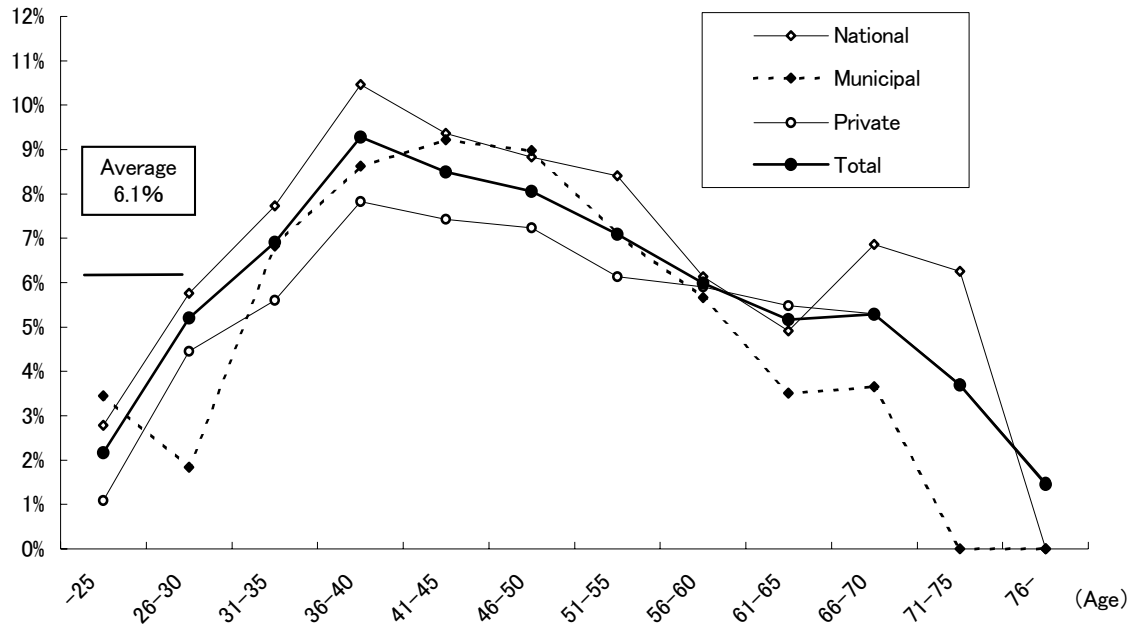

Figure 20　Ratio of Researchers Who Have Traveled Abroad by Age / by Institution Governing Authority

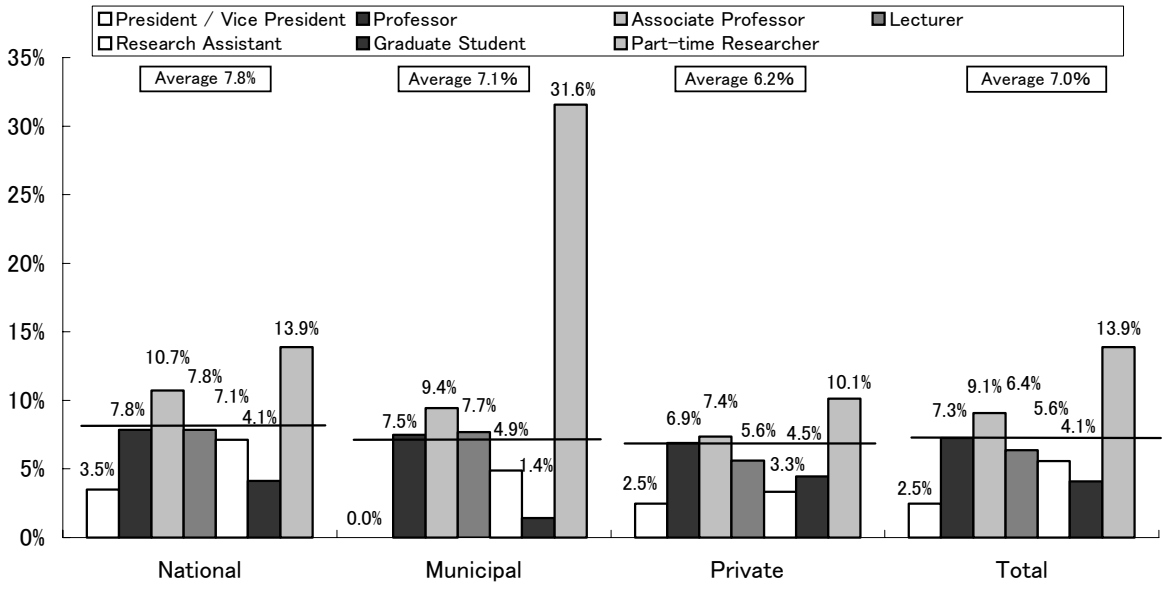

Figure 21　Ratio of Researchers Who Have Traveled Abroad by Professional Title / by Institution Governing Authority

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 25,202, or 14.3%. The figures broken down by institution governing authority were national institutions 17.0%, municipal institutions 14.5%, and private institutions 11.7%. 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 (24.3%), science (21.2%), agriculture (20.8%), and medicine (19.8%), 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 (10.2%), economics (10.0%), and law (9.1%). 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 universities (15.0%) have the highest percentage, followed in descending order by colleges of technology (12.6%), private scientific research institutes (11.9%), and inter-university research institutes (9.4%). The lowest percentages are for government research institutes of the Ministry of Education, Science, Sports, and Culture and junior colleges, at 7.9% and 5.3%, 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 46 to 50 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. This disparity is particularly large in the 46 to 50 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 46 to 50 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 (24.5%) 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)(22.6%) also higher than that for municipal or private institutions. On the other hand, at private institutions the proportion accounted for by affiliated institutions (38.3%) was much higher than that at national or municipal institutions. In the case of municipal institutions researchers covering their own expenses (31.5%) are the most prominent (Figure 30).

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 (37.2% and 31.1%, respectively). Also, a high proportion (30.1%) 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 (31.4%) in the field of science (Figure 31).

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	674	125	1,427	2,226
	Ratio	11.3%	10.3%	9.8%	10.2%
Law	No. of Researchers	70	16	191	277
	Ratio	8.5%	10.2%	9.3%	9.1%
Economics	No. of Researchers	129	37	396	562
	Ratio	11.4%	9.7%	9.7%	10.0%
Science	No. of Researchers	1,322	123	512	1,957
	Ratio	21.4%	24.1%	20.1%	21.2%
Engineering	No. of Researchers	2,167	199	1,030	3,396
	Ratio	25.4%	27.6%	21.8%	24.3%
Agriculture	No. of Researchers	658	74	220	952
	Ratio	23.1%	20.5%	16.1%	20.8%
Medicine	No. of Researchers	1,976	369	1,923	4,268
	Ratio	21.6%	17.8%	18.6%	19.8%
Interdisciplinary Area	No. of Researchers	1,416	188	962	2,566
	Ratio	22.2%	23.5%	14.6%	18.6%
Wide Area	No. of Researchers	108	17	126	251
	Ratio	15.3%	12.7%	9.1%	11.3%
Unknown	No. of Researchers	5,098	547	3,102	8,747
	Ratio	13.2%	10.2%	8.5%	10.9%
Total	No. of Researchers	13,618	1,695	9,889	25,202
	Ratio	17.0%	14.5%	11.7%	14.3%

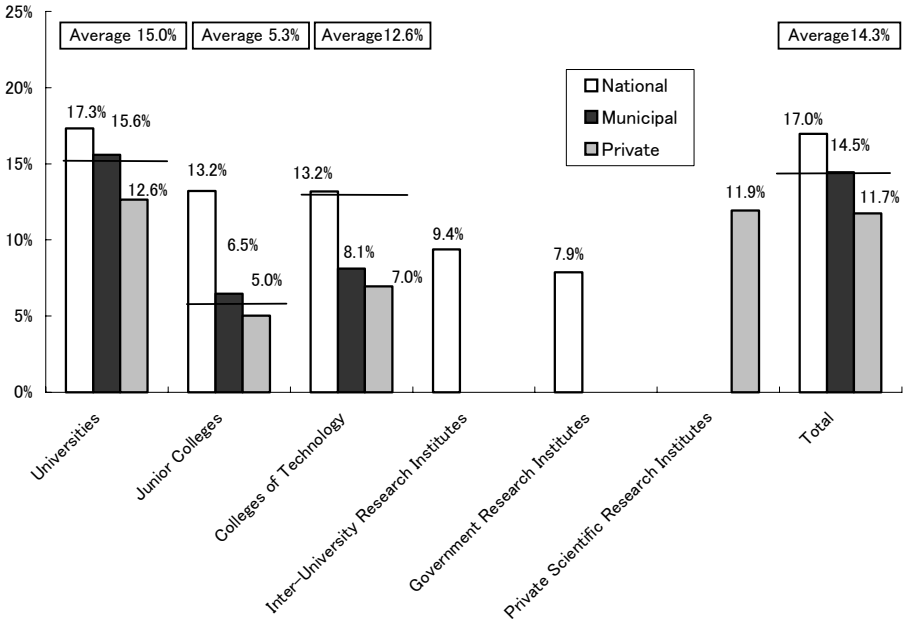

Figure 22　Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Institution Type / by Institution Governing Authority

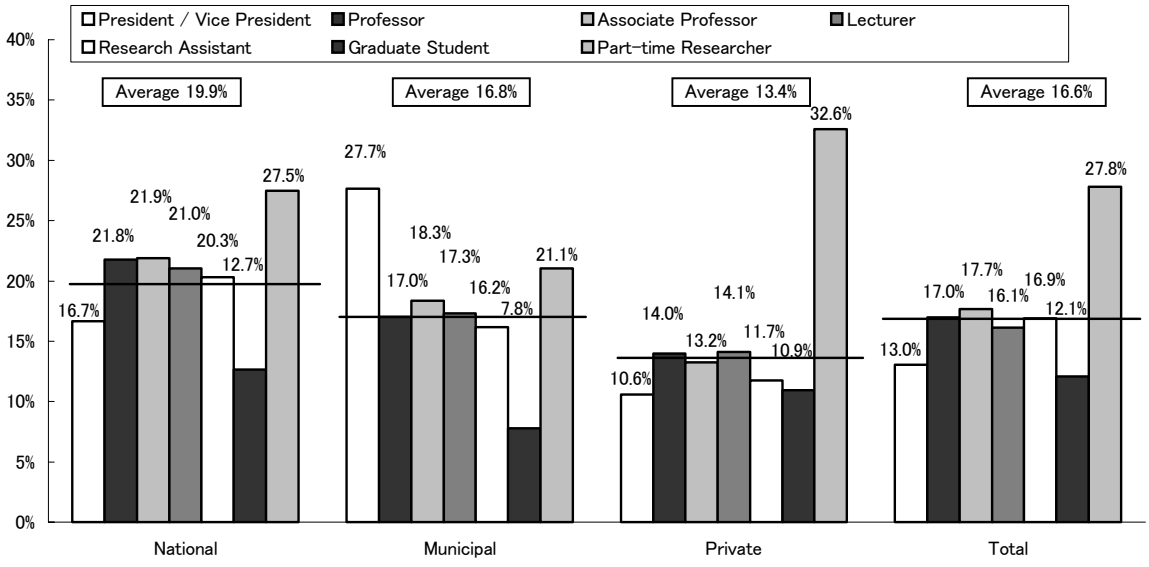

Figure 23　Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Professional Title

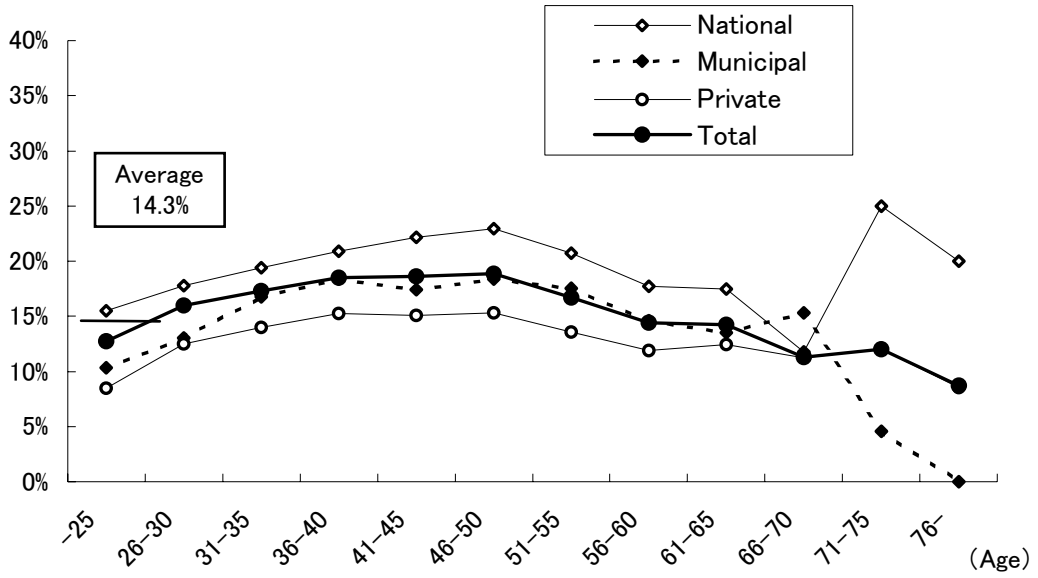

Figure 24　Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Age / by Institution Governing Authority

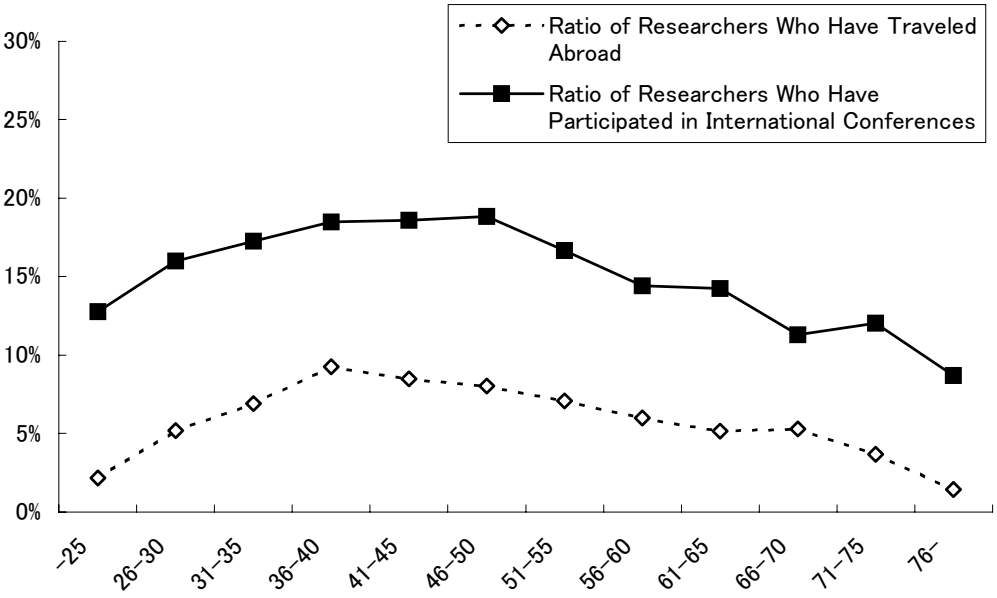

Figure 25　Ratio of Researchers Who Have Traveled Abroad and Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Age

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 23,544, or 13.4%. The figures broken down by institution governing authority were national institutions 16.5%, municipal institutions 13.6%, and private institutions 10.3%. 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 (24.7), science (20.7%), agriculture (20.1%), and medicine (18.6%), 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 (7.6%), economics (7.4%), and law (6.3%). 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 universities (14.1%) have the highest percentage, followed in descending order by colleges of technology (13.1%), private scientific research institutes (10.7%), and inter-university research institutes (9.7%). The lowest percentages are for government research institutes of the Ministry of Education, Science, Sports, and Culture and junior colleges, at 7.0% and 4.2, respectively (Figure 26).

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 27).

Broken down by age, there is a steady rise up to the 46 to 50 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 56 to 60 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 46 to 50 age group (Figure 28).

Figure 29 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	551	95	1,018	1,664
	Ratio	9.3%	7.8%	7.0%	7.6%
Law	No. of Researchers	52	11	127	190
	Ratio	6.3%	7.0%	6.2%	6.3%
Economics	No. of Researchers	111	30	274	415
	Ratio	9.8%	7.9%	6.7%	7.4%
Science	No. of Researchers	1,301	126	487	1,914
	Ratio	21.1%	24.7%	19.1%	20.7%
Engineering	No. of Researchers	2,221	196	1,037	3,454
	Ratio	26.0%	27.2%	21.9%	24.7%
Agriculture	No. of Researchers	648	68	204	920
	Ratio	22.7%	18.8%	14.9%	20.1%
Medicine	No. of Researchers	1,890	343	1,785	4,018
	Ratio	20.6%	16.6%	17.2%	18.6%
Interdisciplinary Area	No. of Researchers	1,410	187	908	2,505
	Ratio	22.1%	23.4%	13.8%	18.2%
Wide Area	No. of Researchers	97	10	108	215
	Ratio	13.8%	7.5%	7.8%	9.6%
Unknown	No. of Researchers	5,005	526	2,718	8,249
	Ratio	13.0%	9.8%	7.5%	10.3%
Total	No. of Researchers	13,286	1,592	8,666	23,544
	Ratio	16.5%	13.6%	10.3%	13.4%

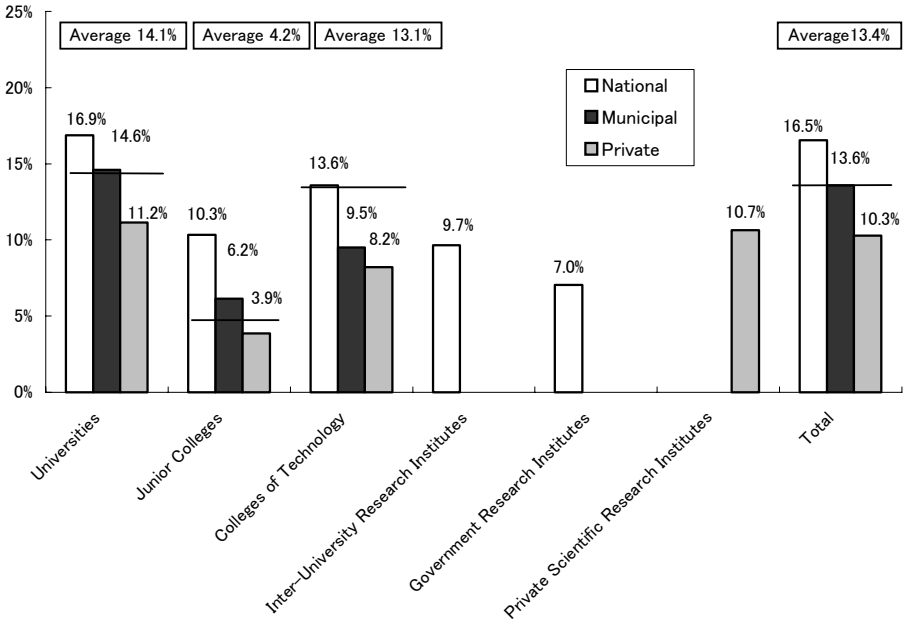

Figure 26　Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Institution Type / by Institution Governing Authority

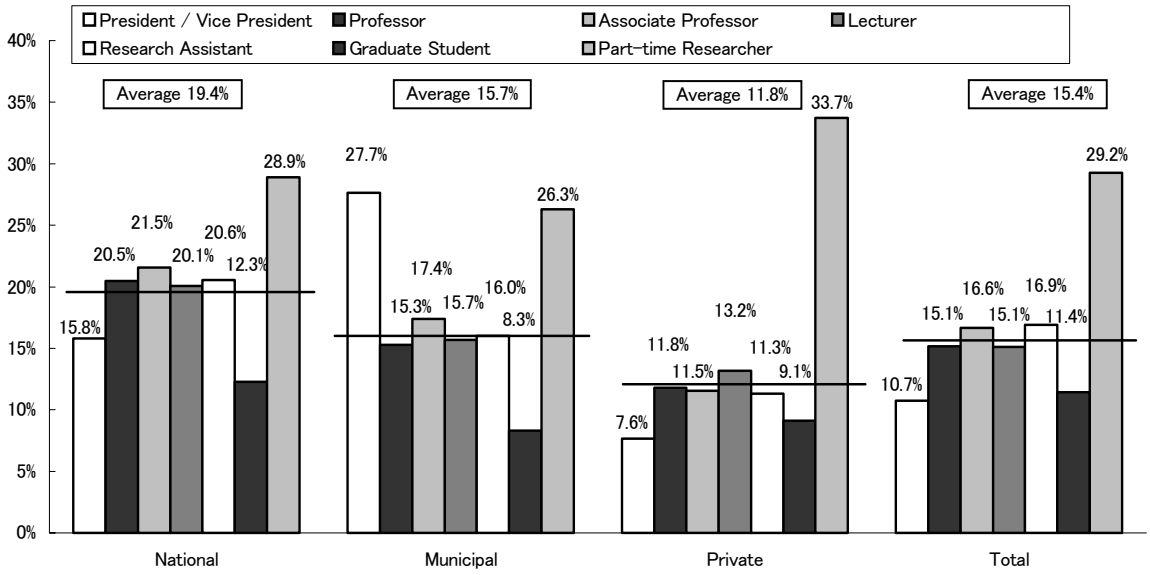

Figure 27　Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Professional Title

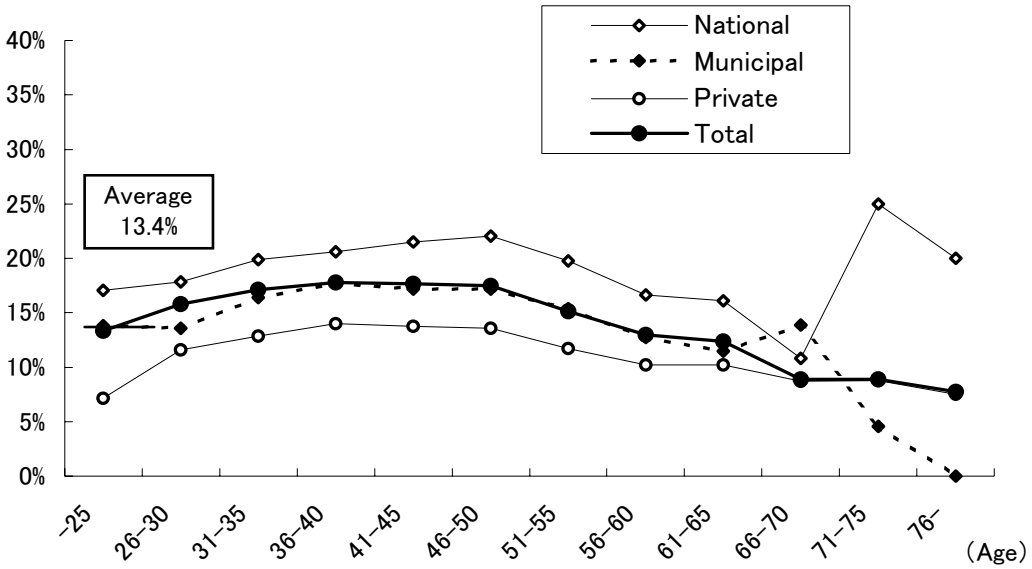

Figure 28　Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Age / by Institution Governing Authority

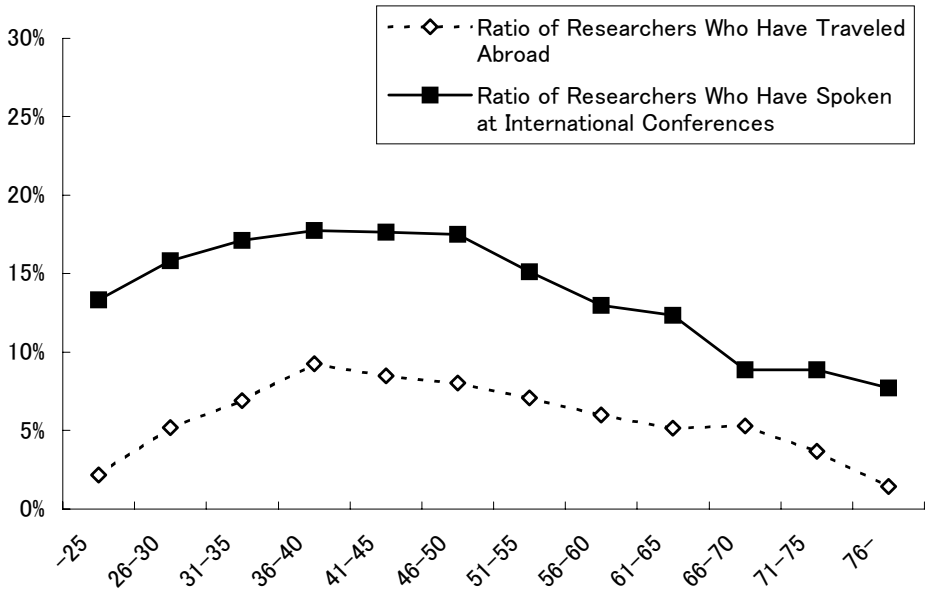

Figure 29　Ratio of Researchers Who Have Traveled Abroad and Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Age

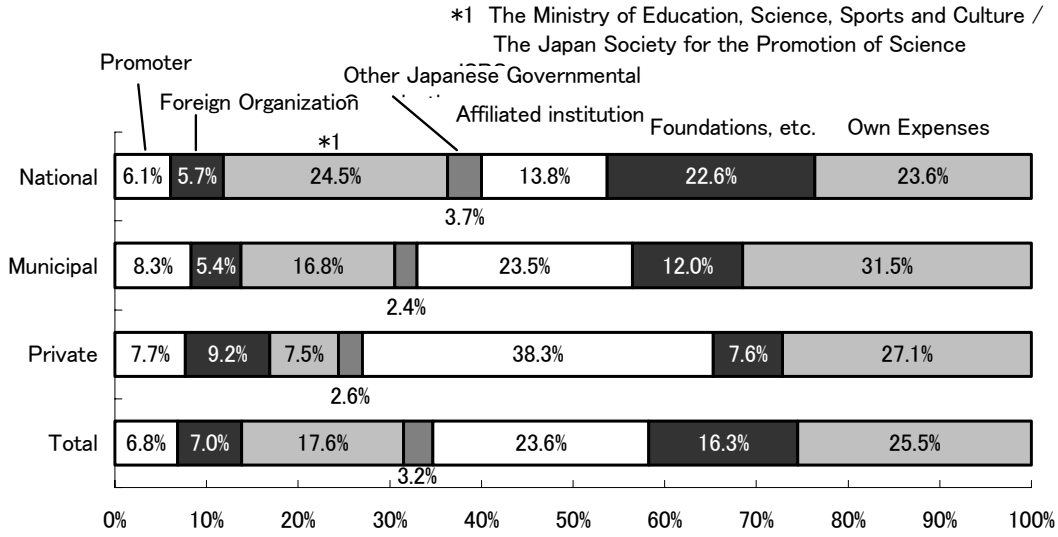

Figure 30　Party Covering Expenses for Participation in International Conferences, Etc., Overseas by Institution Governing Authority

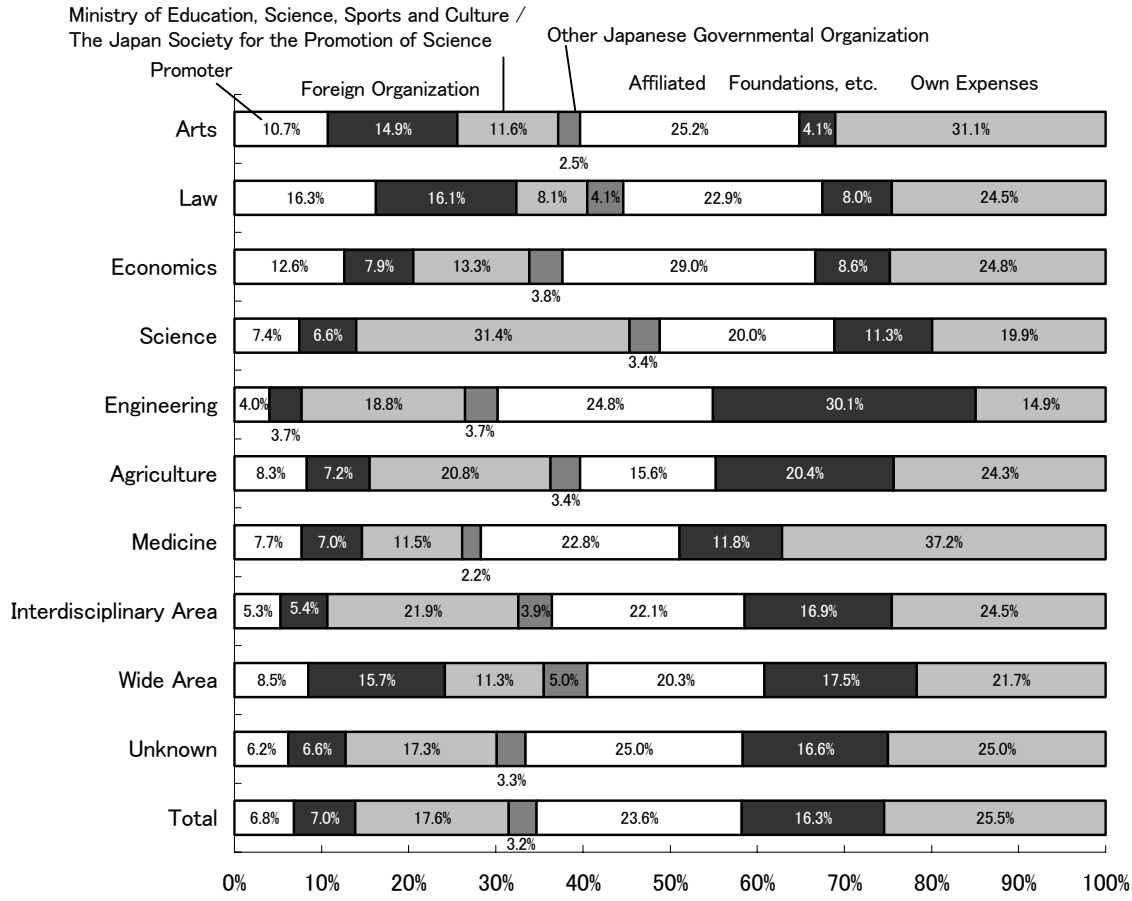

Figure 31　Party Covering Expenses for Participation in International Conferences, Etc., Overseas by Field of Specialization

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 (105,566 respondents, 96.0%) and the second most widely used language, German (3,755 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 84.8% and 86.5%, respectively. In these two fields the proportion of usage of German and French was relatively high. The percentages for arts were German 9.8% and French 6.9%, and those for law were German 19.2% and French 8.4% (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 (106,028 respondents, 96.5%) and the second most widely used language, German (4,347 respondents, 4.0%).

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 86.5% and 87.9%, respectively. In these two fields the proportion of usage of German and French was relatively high. The percentages for arts were German 10.9% and French 7.5%, and those for law were German 22.6% and French 9.4% (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	21,770	14,942	12,675	1,034	289	184	1,457	907	937	6,828
Law	3,040	2,232	1,930	187	31	33	429	90	93	808
Economics	5,611	4,175	4,035	112	39	44	210	121	157	1,436
Science	9,237	8,040	8,029	90	18	15	54	28	25	1,197
Engineering	14,003	11,946	11,919	49	24	13	76	106	108	2,057
Agriculture	4,579	3,747	3,726	20	14	1	30	34	56	832
Medicine	21,590	17,132	17,116	65	25	4	139	78	61	4,458
Interdisciplinary Area	13,777	10,183	10,088	76	29	18	144	85	103	3,594
Wide Area	2,229	1,329	1,227	41	12	12	82	27	62	900
Unknown	80,442	36,250	34,821	716	161	139	1,134	744	621	44,192
Total	176,278	109,976	105,566	2,390	642	463	3,755	2,220	2,223	66,302

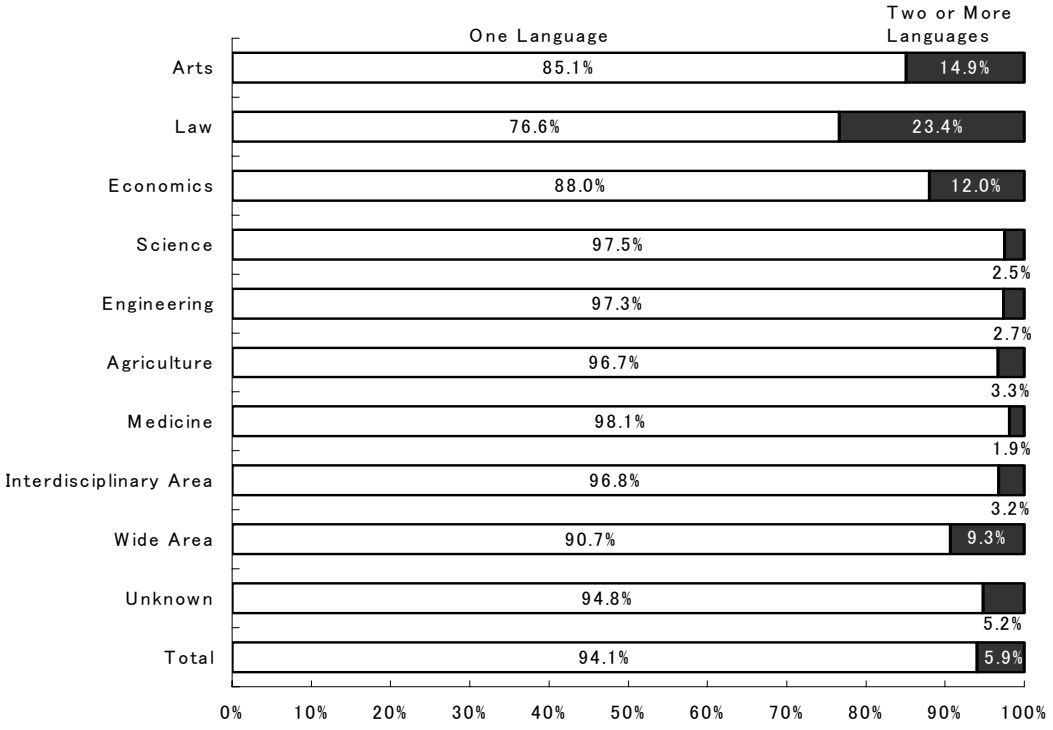

Figure 32　Proportion of Researchers by Field of Specialization / by Number of Languages Other Than Japanese Used to Present Research Findings, Etc.

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	21,770	14,818	12,814	1,104	281	196	1,611	913	791	6,952
Law	3,040	2,236	1,965	211	27	28	506	77	88	804
Economics	5,611	4,236	4,124	150	29	50	283	103	138	1,375
Science	9,237	8,250	8,246	116	14	17	84	17	20	987
Engineering	14,003	12,092	12,070	62	15	14	127	85	82	1,911
Agriculture	4,579	3,803	3,791	20	11	2	50	27	26	776
Medicine	21,590	16,967	16,953	53	17	5	154	61	38	4,623
Interdisciplinary Area	13,777	10,237	10,167	82	20	12	185	75	77	3,540
Wide Area	2,229	1,273	1,193	35	14	14	70	25	49	956
Unknown	80,442	36,010	34,705	749	148	132	1,277	668	489	44,432
Total	176,278	109,922	106,028	2,582	576	470	4,347	2,051	1,798	66,356

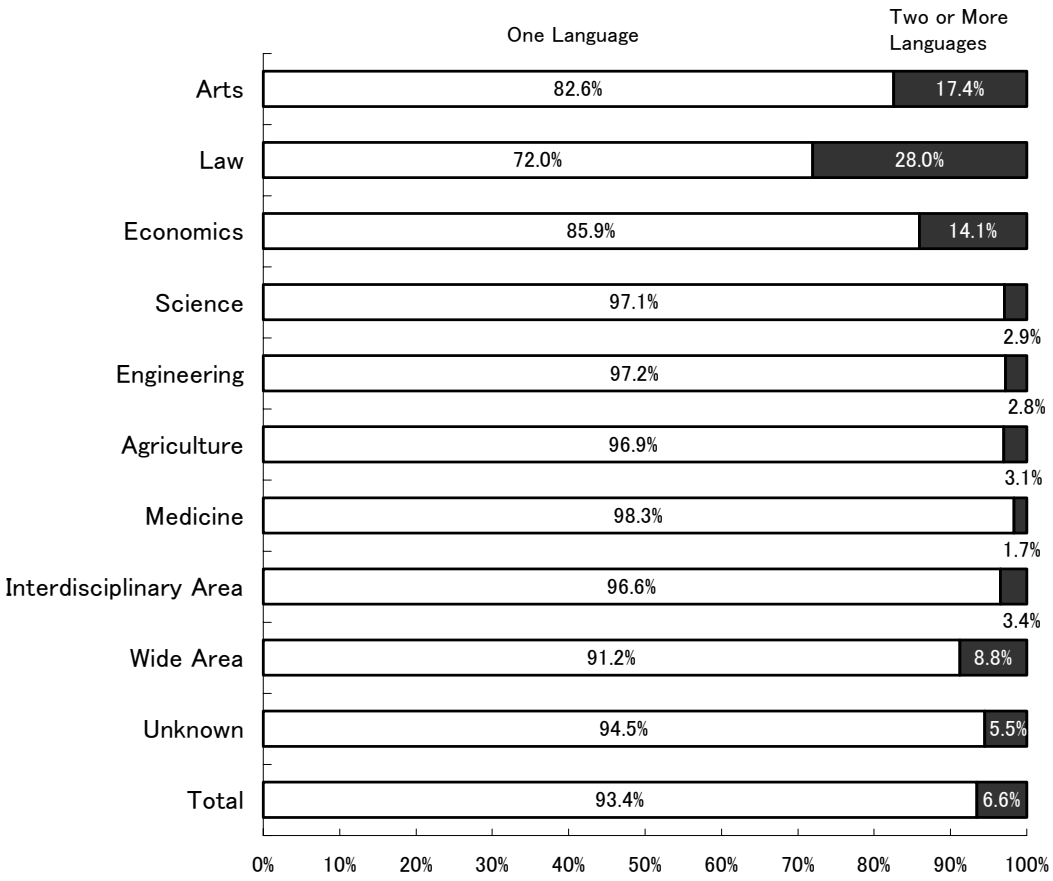

Figure 33　Proportion of Researchers by Field of Specialization/by Number of Languages Other Than Japanese Used to Write Papers

7. Academic Society Affiliations of Researchers

7.1 Japanese Academic Societies

Membership in Japanese academic societies was reported by 126,835, or 72.0%, 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 69.2%, municipal institutions 73.7 and private institutions 74.3%.

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 3.8, at private institutions 3.6, and at national institutions 3.4 (Table 12).

Broken down by field of specialization, researchers not belonging to any academic societies were most numerous in wide area (18.5%), followed in descending order by science (13.0%), law (11.6%), medicine (11.1%), interdisciplinary area (10.8%), arts (10.6%), and agriculture (10.1%) (Figure 35).

The average number of academic society memberships was highest was medicine, where the number of memberships per individual averages 4.5. In the field of science the average number of memberships was low because 28.6% of the respondents in this field belonged to one academic society only(Table 12).

There were no significant differences correlating with institution governing authority.

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 (2.6), followed in descending order by universities (2.5), junior colleges (2.5), colleges of technology (2.4), private scientific research institutes (2.1), and inter-university research institutes (0.9) (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	3.7	3.6	3.6
Law	3.1	3.0	3.3	3.3
Economics	3.1	3.4	3.5	3.5
Science	2.6	2.9	2.7	2.6
Engineering	3.3	3.7	3.6	3.4
Agriculture	3.8	4.1	4.1	3.9
Medicine	4.4	4.7	4.5	4.5
Interdisciplinary Area	3.6	4.1	3.6	3.7
Wide Area	3.5	3.3	3.1	3.2
Unknown	3.0	3.5	3.3	3.2
Total	3.4	3.8	3.6	3.5

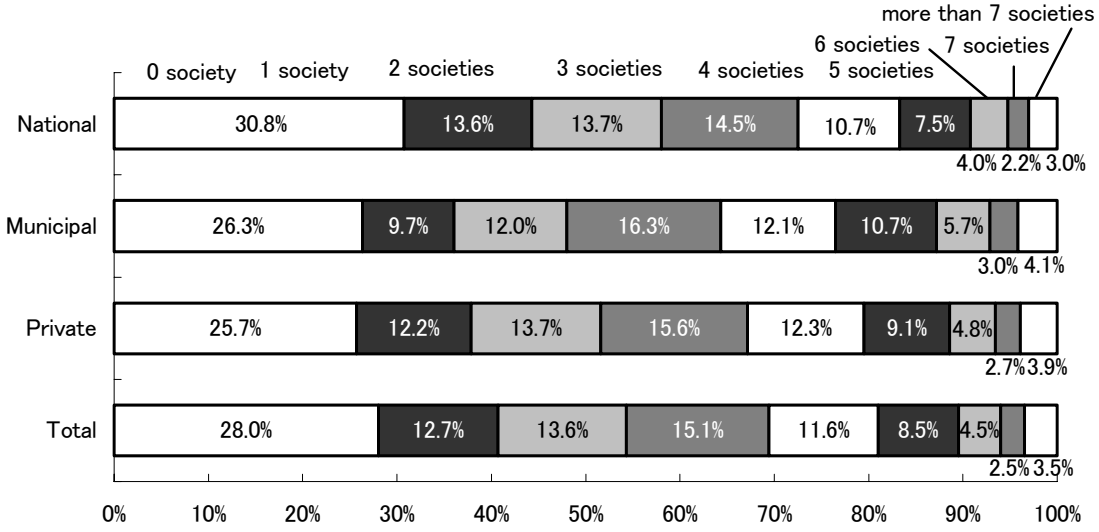

Figure 34　Ratio of Average Number of Academic Society Affiliations (Japanese) by Institution Governing Authority

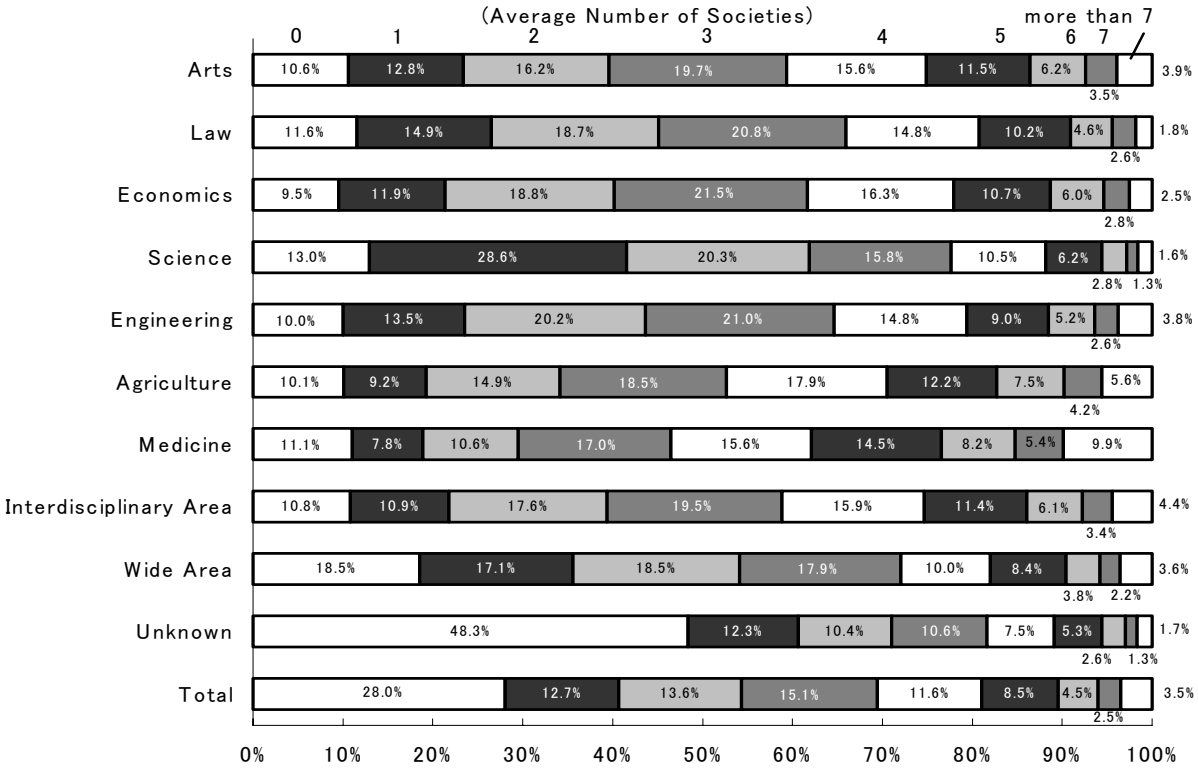

Figure 35　Ratio of Average Number of Academic Society Affiliations (Japanese) by Field of Specialization

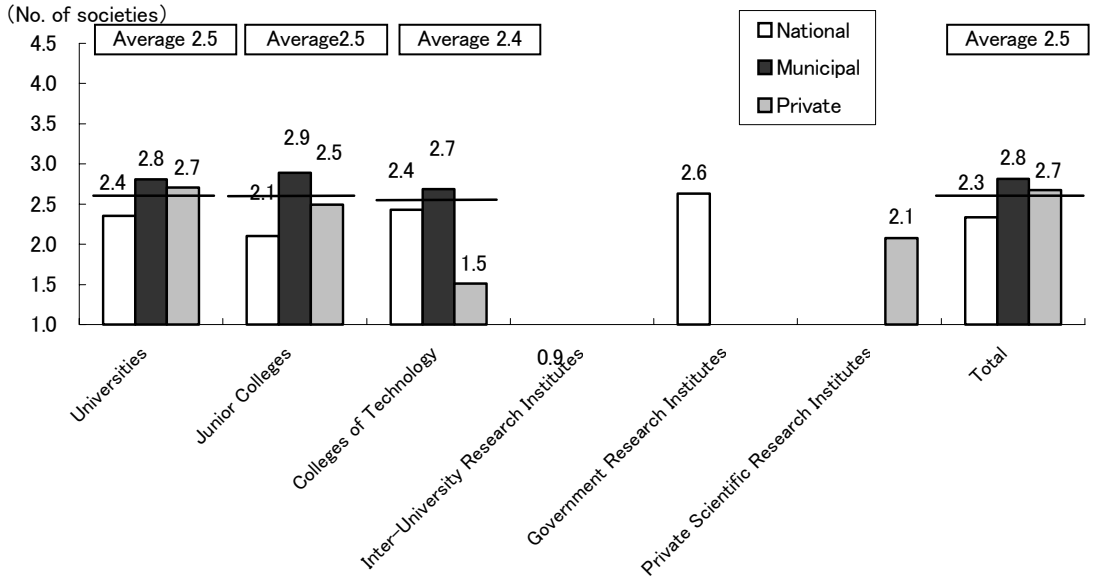

Figure 36　Average Number of Academic Society Affiliations (Japanese) by Institution Type/ by Institution Governing Authority

7.2 Overseas Academic Societies

Membership in one or more overseas academic societies was reported by 31,613, or 17.9%, 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 126,835 researchers (72.0%) 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 19.6% or 15,741 persons. The next is municipal institutions at 18.6% and private institutions at 16.2%. 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 (29.1%), science (28.5%), agriculture (27.3%), and medicine (27.3%). It was somewhat lower in fields in the humanities and social sciences such as economics (19.3%), arts (17.4%), and law (15.5%) (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 1.61, followed by universities in second place at 1.49 (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	1.4	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	1.4	1.4	1.5
Medicine	1.7	1.6	1.6	1.7
Interdisciplinary Area	1.5	1.4	1.5	1.5
Wide Area	1.6	1.4	1.6	1.6
Unknown	1.4	1.5	1.4	1.4
Total	1.5	1.5	1.5	1.5

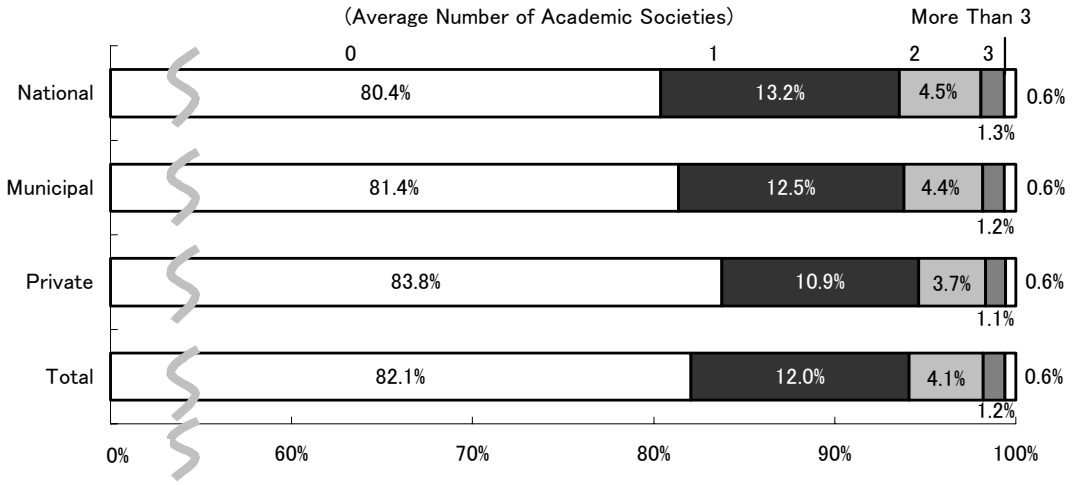

Figure 37　Ratio of Average Number of Academic Society Affiliations (Overseas) by Institution Governing Authority

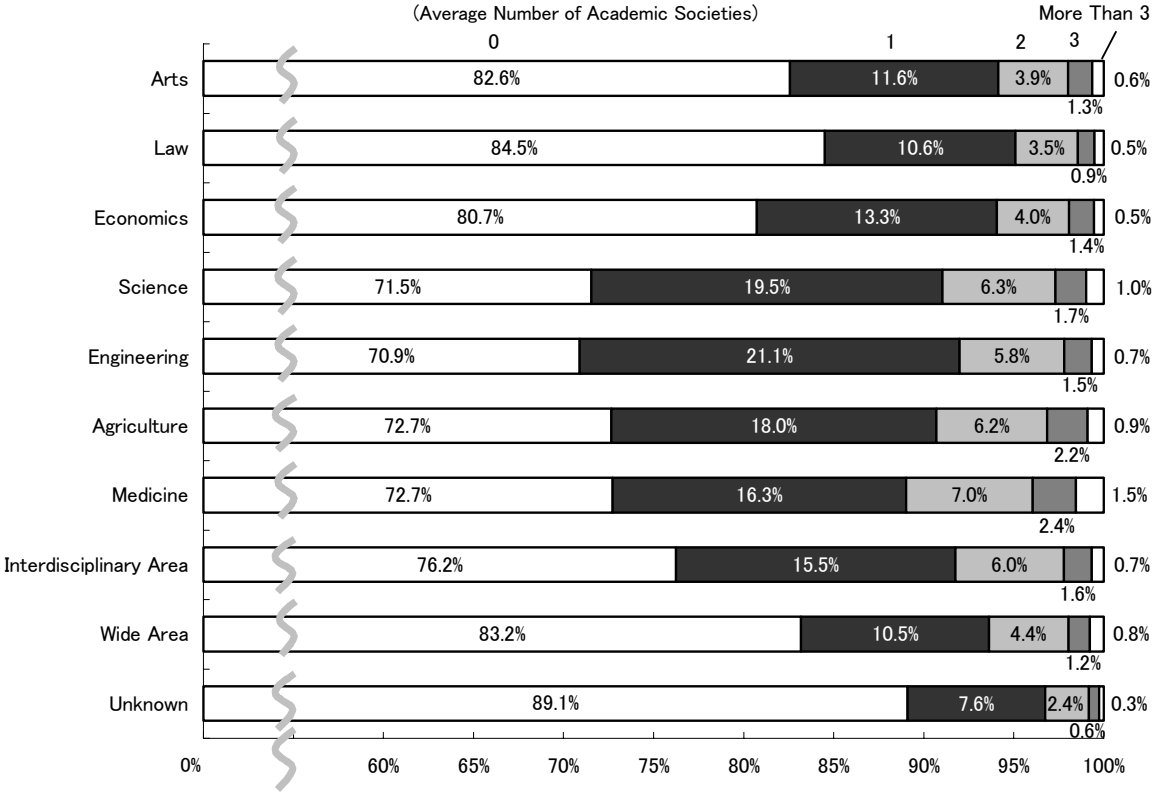

Figure 38　Ratio of Average Number of Academic Society Affiliations (Overseas) by Field of Specialization

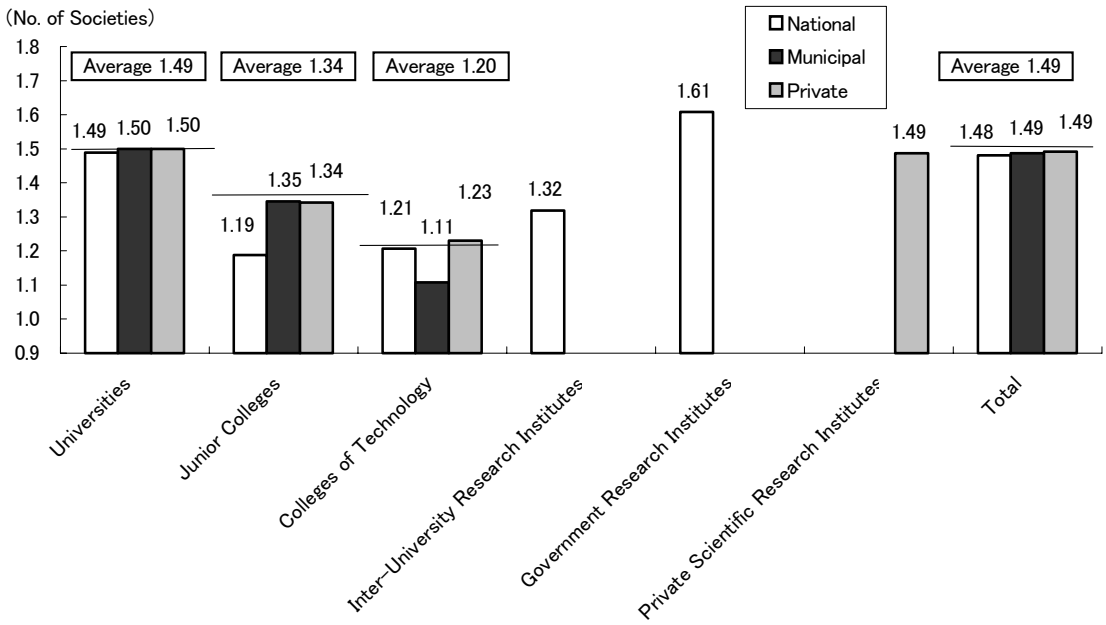

Figure 39　Average Number of Academic Society Affiliations (Overseas) Among Respondents Affiliated with Overseas Academic Society, by Institution Type / by Institution Governing Authority

8. Academic Awards Received

8.1 Japanese Awards Received

Of the total number of researchers, 15.3% have received some sort of Japanese academic award. The breakdown by institution governing authority is national institutions 18.6%, municipal institutions 14.5%, and private institutions 12.3%.
Broken down by field of specialization, the percentage of Japanese award holders was highest in engineering (37.5%), followed in descending order by agriculture (29.1%) and wide area (23.8%) (Figure 40).

The type of institution with the largest percentage of Japanese award holders was universities at 15.9%. This was followed in descending order by private scientific research institutes (14.7%), colleges of technology (13.9%), government research institutes of the Ministry of Education, Science, Sports, and Culture (11.9%), inter-university research institutes (11.0%), and junior colleges (8.7%) (Figure 41).

For all respondents overall, the average number of Japanese academic awards received was 0.27. The breakdown by institution governing authority is national institutions 0.33, municipal institutions 0.26, and private institutions 0.22. The breakdown by field of specialization puts engineering (0.83) in first place, followed by wide area (0.60) and agriculture (0.44) (Figure 42).

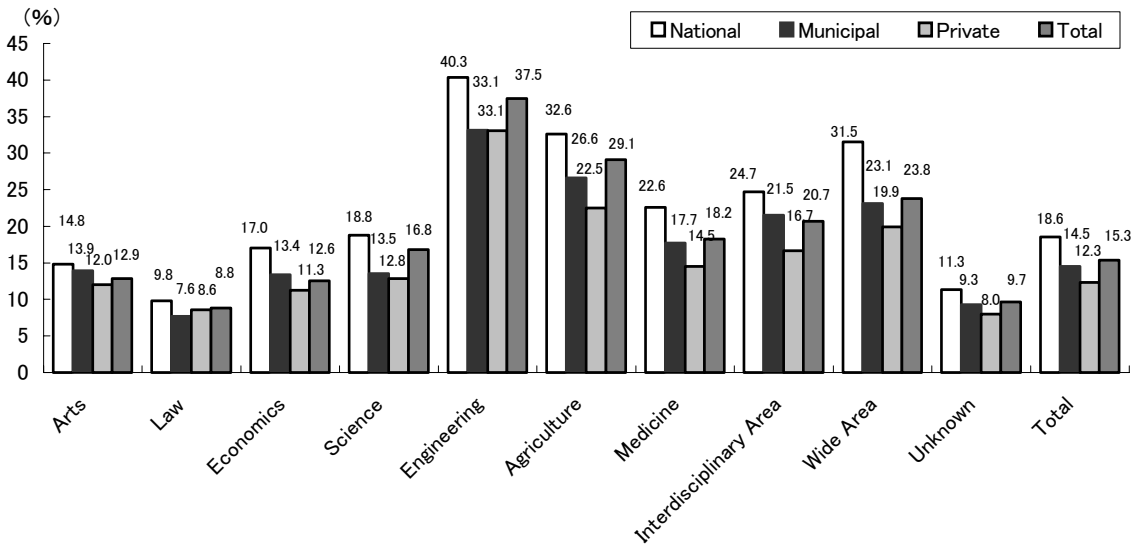

Figure 40　Ratio of Persons Who Have Received Awards (Japanese) by Field of Specialization

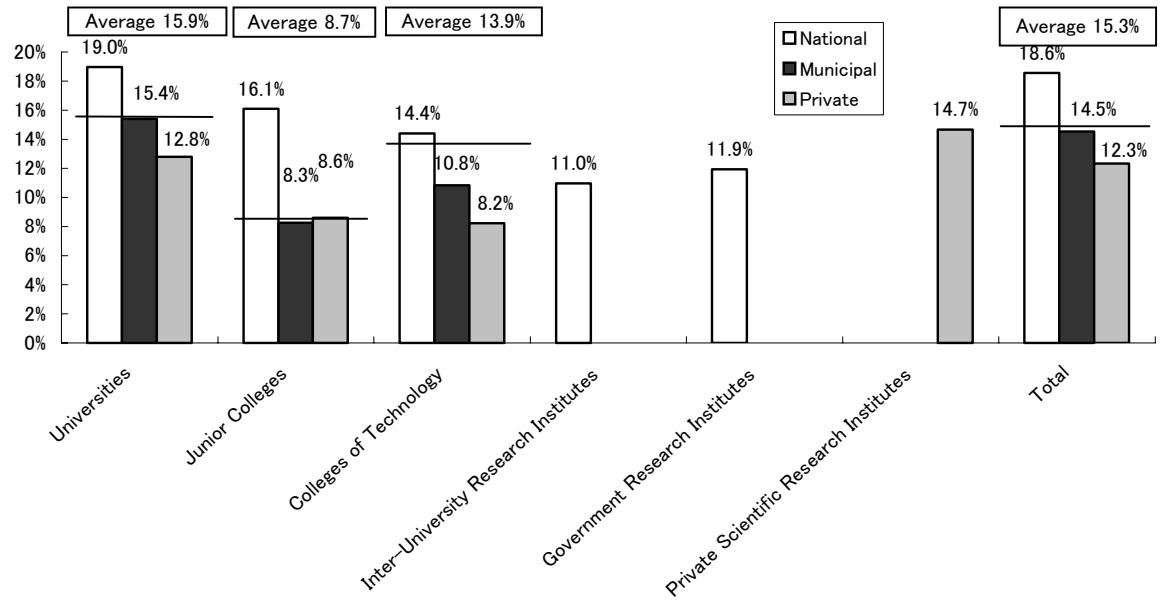

Figure 41　Ratio of Persons Who Have Received Awards (Japanese) by Institution Type

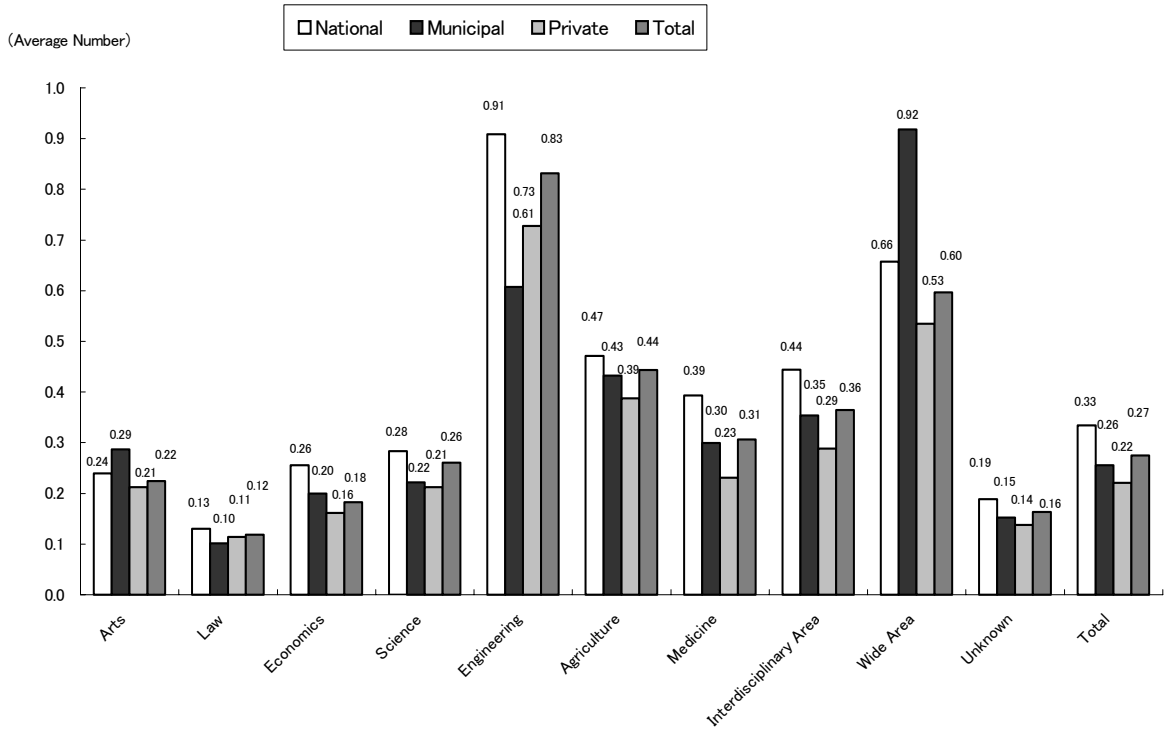

Figure 42　Average Number of Awards Received (Japanese) by Field of Specialization

8.2 Overseas Awards Received

Of the total number of researchers, 2.6% have received some sort of overseas academic award. The breakdown by institution governing authority is national institutions 3.0%, municipal institutions 2.6%, and private institutions 2.2%.

Broken down by field of specialization, the percentage of overseas award holders was highest in engineering (6.4%), followed in descending order by wide area (5.2%) and medicine (4.1%) (Figure 43).

The type of institution with the largest percentage of overseas award holders was universities at 2.6%. This was followed in descending order by private scientific research institutes (2.4%), colleges of technology (1.2%), inter-university research institutes (1.1%), junior colleges (1.1%), and government research institutes of the Ministry of Education, Science, Sports, and Culture (1.1%) (Figure 44).

The average number of overseas academic awards received by respondents overall was 0.038. The breakdown by institution governing authority is national institutions 0.043, municipal institutions 0.041, and private institutions 0.034. The breakdown by field of specialization puts engineering (0.093) in first place, followed by wide area (0.090), medicine (0.059) (Figure 45).

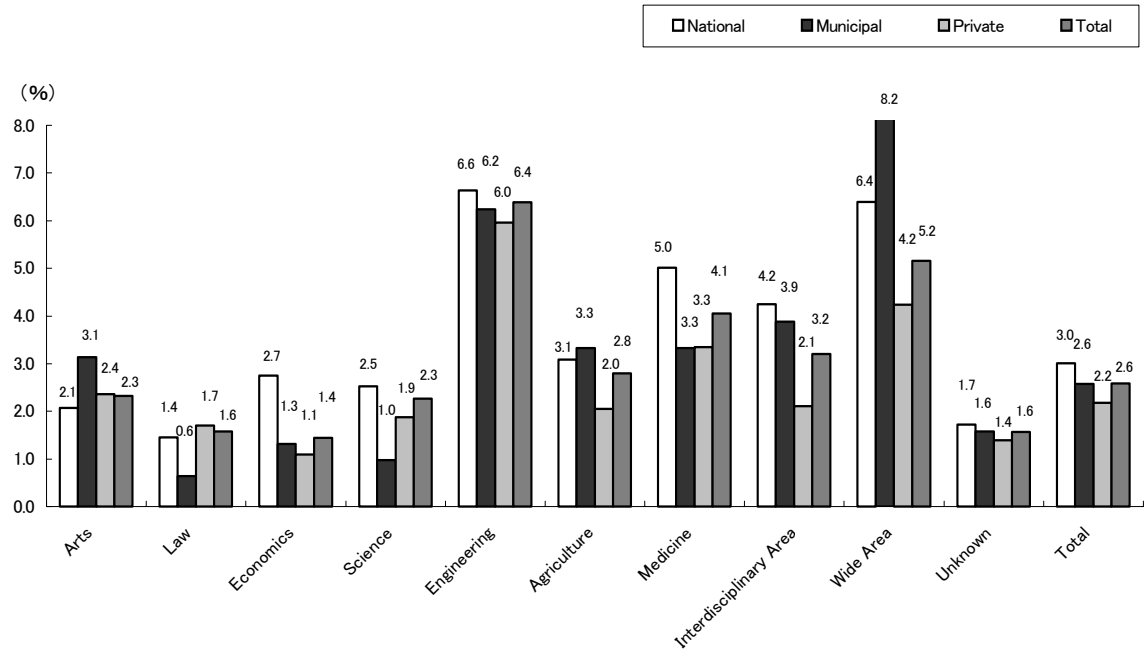

Figure 43　Ratio of Persons Who Have Received Awards (Overseas) by Field of Specialization

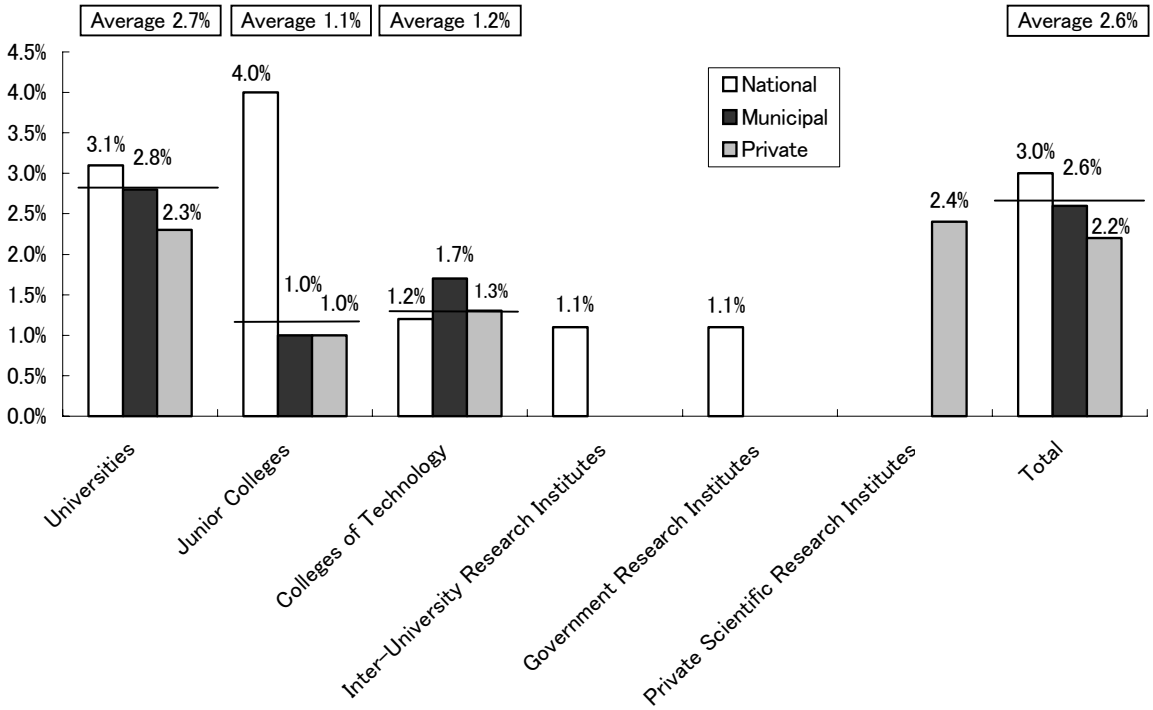

Figure 44　Ratio of Persons Who Have Received Awards (Overseas) by Institution Type

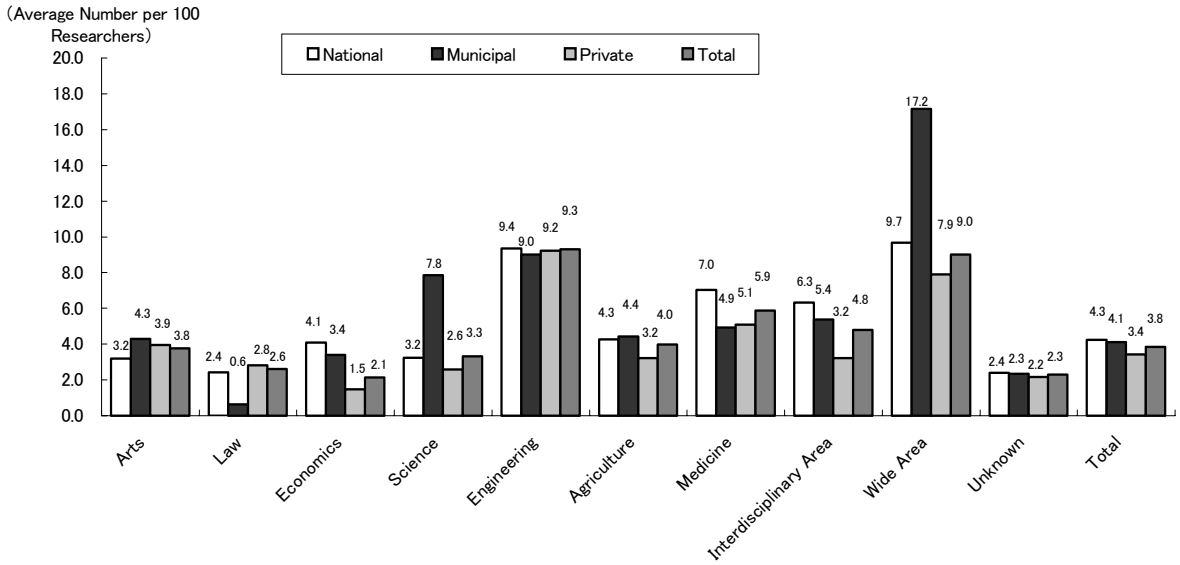

Figure 45　Average Number of Awards Received (Overseas) by Field of Specialization

Appendixes

2003 Directory Database of Research and Development Activities (ReaD) -- Survey Form

1. The guide book of Survey Form filling up
   : Researcher

2. The new researcher Survey Form

Academic Research Activities in Japan

- A Report on the 2003 Academic Research Activities Survey -

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