Introduction

National Institute of Informatics conducts an "Academic Research Activities Survey". 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.

The survey for fiscal 2001 covers 1,483 institutions engaged in academic research, and some 139,000 scholars affiliated with these institutions supplied most of the replies. Note that the scope of the survey respondents was widened in 1998 to include graduate students 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., in addition to faculty and researchers employed at universities, etc., in positions equivalent to associate professor or above.

The results of the survey can be accessed online using the "Directory Database of Research and Development Activities" (ReaD). This service enables users to obtain detailed information on researchers and scholars from universities and other institutions throughout Japan.

The present report is a statistical compilation of the survey data for fiscal 2001 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 --").

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 May 1, 2001: 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 1,483 institutions and 232,588 persons subject to the survey, and valid responses were received from 1,377 institutions (92.9% response rate) and 139,873 persons (60.1% response rate) (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	Persons	Institutions	Persons	Institutions	Persons
Universities	671	208,662	661	121,967	98.5%	58.5%
Junior Colleges	551	15,849	531	11,794	96.4%	74.4%
Colleges of Technology	62	4,449	62	4,126	100.0%	92.7%
Inter-university Research Institutes	20	1,805	19	922	95.0%	51.1%
Government Research Institutes	18	556	13	306	72.2%	55.0%
Private Scientific Research Institutes	161	1,267	91	758	56.5%	59.8%
Total	1,483	232,588	1,377	139,873	92.9%	60.1%

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 medicine (23.2%) and arts (20.9%) have the largest shares, together accounting for 44.1% of the total. These fields are followed, in descending order, by engineering (15.4%), interdisciplinary area (13.2%), science (10.3%), agriculture (5.1%), economics (5.0%), law (2.8%), and wide area (1.7%). Also, the ratio of researchers in the humanities and social sciences (researchers in arts, law, and economics), total 40,037 persons, to researchers in the natural sciences (researchers in science, engineering, agriculture, and medicine), total 75,576 persons, is 35:65.

A breakdown of researchers by the governing authority of the institutions they are affiliated with shows that 46.9% (65,630 persons) are at national institutions, 6.2% (8,685 persons) are at municipal institutions, and 46.9% (65,558 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 (70.1%), agriculture (65.1%) and engineering (64.2%). In contrast, a high proportion of researchers in the humanities and social sciences are affiliated with private institutions, such as economics (73.3%), wide area (70.0%), arts (66.4%), and law (64.8%).

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	6,068	984	1,241	6,480	8,453	3,282	10,922	6,212	409	1,129	45,180	
		Others	1,514	173	156	2,634	3,204	1,342	3,584	1,941	100	370	15,018	
		Total	7,582	1,157	1,397	9,114	11,657	4,624	14,506	8,153	509	1,499	60,198	100
	Municipal	Assistant and Above	1,108	153	362	589	782	331	2,329	734	110	172	6,670	
		Others	55	6	11	32	93	69	287	63	4	30	650	
		Total	1,163	159	373	621	875	400	2,616	797	114	202	7,320	74
	Private	Assistant and Above	14,131	2,172	4,332	3,081	5,697	1,279	12,284	5,741	998	961	50,676	
		Others	979	178	252	141	359	112	1,175	318	45	214	3,773	
		Total	15,110	2,350	4,584	3,222	6,056	1,391	13,459	6,059	1,043	1,175	54,449	497
	Total	Assistant and Above	21,307	3,309	5,935	10,150	14,932	4,892	25,535	12,687	1,517	2,262	102,526	
		Others	2,548	357	419	2,807	3,656	1,523	5,046	2,322	149	614	19,441	
		Total	23,855	3,666	6,354	12,957	18,588	6,415	30,581	15,009	1,666	2,876	121,967	671
Junior Colleges	National	Assistant and Above	47	3	6	18	27	2	318	64	18	11	514	
		Others	0	0	0	0	0	0	0	0	0	0	0	
		Total	47	3	6	18	27	2	318	64	18	11	514	18
	Municipal	Assistant and Above	258	18	55	32	30	126	358	131	41	34	1,083	
		Others	0	0	0	0	0	0	0	0	0	2	2	
		Total	258	18	55	32	30	126	358	131	41	36	1,085	51
	Private	Assistant and Above	4,132	167	498	286	498	483	901	2,179	598	448	10,190	
		Others	0	0	0	0	1	0	0	2	1	1	5	
		Total	4,132	167	498	286	499	483	901	2,181	599	449	10,195	482
	Total	Assistant and Above	4,437	188	559	336	555	611	1,577	2,374	657	493	11,787	
		Others	0	0	0	0	1	0	0	2	1	3	7	
		Total	4,437	188	559	336	556	611	1,577	2,376	658	496	11,794	551
Colleges of Technology	National	Assistant and Above	454	28	24	495	2,056	34	16	522	26	32	3,687	
		Others	1	0	0	0	1	0	0	1	0	0	3	
		Total	455	28	24	495	2,057	34	16	523	26	32	3,690	54
	Municipal	Assistant and Above	41	0	1	45	151	2	2	31	2	5	280	
		Others	0	0	0	0	0	0	0	0	0	0	0	
		Total	41	0	1	45	151	2	2	31	2	5	280	5
	Private	Assistant and Above	28	0	1	14	66	1	0	24	10	12	156	
		Others	0	0	0	0	0	0	0	0	0	0	0	
		Total	28	0	1	14	66	1	0	24	10	12	156	3
	Total	Assistant and Above	523	28	26	554	2,273	37	18	577	38	49	4,123	
		Others	1	0	0	0	1	0	0	1	0	0	3	
		Total	524	28	26	554	2,274	37	18	578	38	49	4,126	62
Inter-University Research Institutes		Assistant and Above	87	4	3	350	105	3	17	239	9	9	826	
		Others	5	0	0	51	9	1	2	27	0	1	96	
		Total	92	4	3	401	114	4	19	266	9	10	922	20
Government Research Institutes		Assistant and Above	175	0	0	59	8	7	3	45	5	1	303	
		Others	0	0	0	3	0	0	0	0	0	0	3	
		Total	175	0	0	62	8	7	3	45	5	1	306	18
Private Scientific Research Institutes		Assistant and Above	95	4	26	86	65	103	189	122	40	9	739	
		Others	1	0	0	4	0	1	6	5	1	1	19	
		Total	96	4	26	90	65	104	195	127	41	10	758	161
Total	National	Assistant and Above	6,831	1,019	1,274	7,402	10,649	3,328	11,276	7,082	467	1,182	50,510	
		Others	1,520	173	156	2,688	3,214	1,343	3,586	1,969	100	371	15,120	
		Total	8,351	1,192	1,430	10,090	13,863	4,671	14,862	9,051	567	1,553	65,630	210
	Municipal	Assistant and Above	1,407	171	418	666	963	459	2,689	896	153	211	8,033	
		Others	55	6	11	32	93	69	287	63	4	32	652	
		Total	1,462	177	429	698	1,056	528	2,976	959	157	243	8,685	130
	Private	Assistant and Above	18,386	2,343	4,857	3,467	6,326	1,866	13,374	8,066	1,646	1,430	61,761	
		Others	980	178	252	145	360	113	1,181	325	47	216	3,797	
		Total	19,366	2,521	5,109	3,612	6,686	1,979	14,555	8,391	1,693	1,646	65,558	1,143
	Total	Assistant and Above	26,624	3,533	6,549	11,535	17,938	5,653	27,339	16,044	2,266	2,823	120,304	
		Others	2,555	357	419	2,865	3,667	1,525	5,054	2,357	151	619	19,569	
		Total	29,179	3,890	6,968	14,400	21,605	7,178	32,393	18,401	2,417	3,442	139,873	1,483

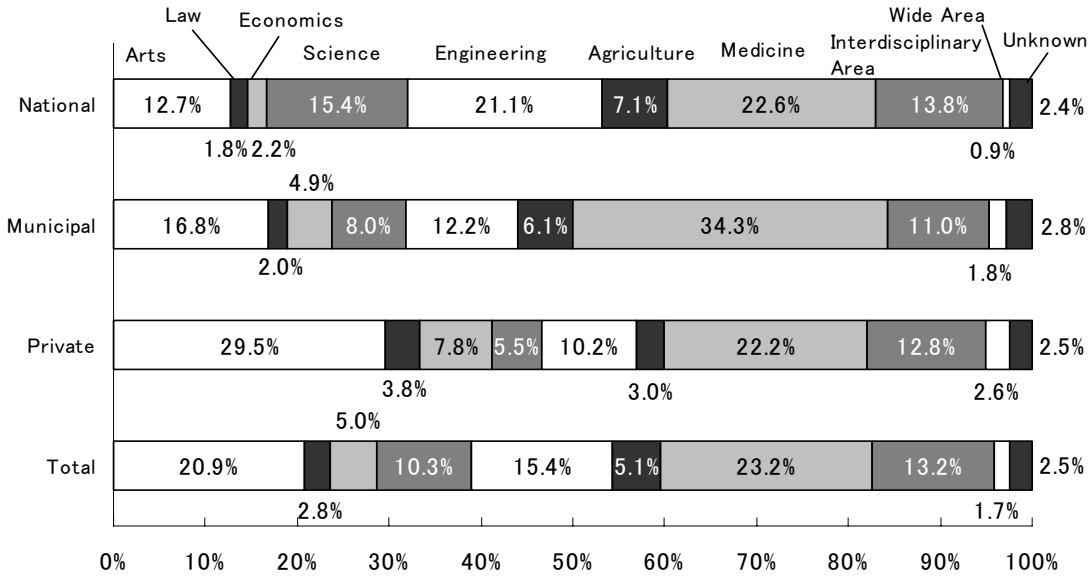

Figure 1　Composition of Researchers by Institution Governing Authority / by Field of Specialization

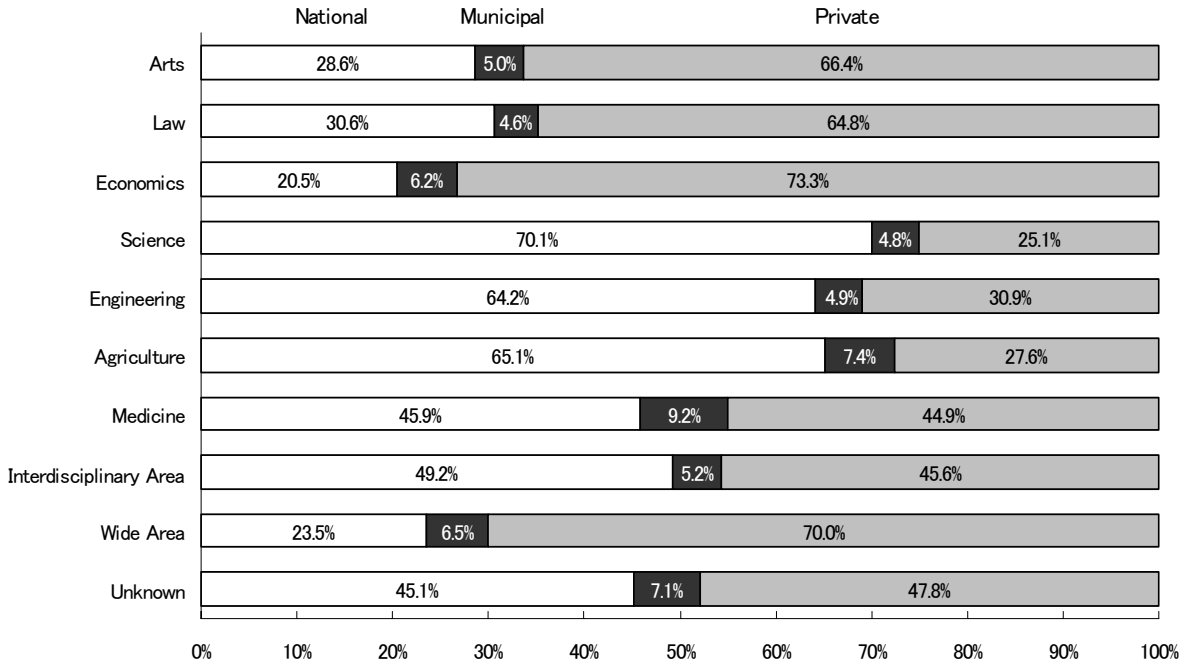

Figure 2　Composition of Researchers by Field of Specialization / by Institution Governing Authority

2.2 Number of Researchers by Institution Type

Broken down by institution type, the proportion of researchers affiliated with universities account for 87.2% of the total (121,967 persons), those affiliated with junior colleges for 8.4% (11,794 persons), those affiliated with colleges of technology for 2.9% (4,126 persons), those affiliated with inter-university research institutes for 0.7% (922 persons), those affiliated with private scientific research institutes for 0.5% (758 persons), and those affiliated with government research institutes of the Ministry of Education, Science, Sports, and Culture for 0.2% (306 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 49.4%, municipal 6.0%, and private 44.6%; that for junior colleges is national 4.4%, municipal 9.2%, and private 86.4%; and that for colleges of technology is national 89.4%, municipal 6.8%, and private 3.8%.

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 associate professors, 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	0.4%	0.2%	0.5%	0.5%
	Professor	33.8%	26.1%	30.4%	42.6%
	Associate Professor	20.9%	21.3%	23.3%	20.2%
	Lecturer	10.2%	6.2%	13.6%	14.3%
	Research Assistant	16.9%	19.8%	21.4%	13.0%
	Others	1.9%	1.4%	2.0%	2.5%
	Graduate Student	14.7%	23.0%	8.6%	6.4%
	Part-time Researcher	0.9%	1.8%	0.3%	0.1%
	Unknown	0.3%	0.1%	0.0%	0.4%
	Total	100.0%	100.0%	100.0%	100.0%
Junior Colleges	President / Vice President	1.5%	0.4%	1.2%	1.6%
	Professor	41.1%	36.6%	33.0%	42.2%
	Associate Professor	28.8%	30.7%	28.8%	28.7%
	Lecturer	20.0%	7.0%	21.7%	20.5%
	Research Assistant	7.2%	25.3%	14.7%	5.5%
	Others	1.3%	0.0%	0.6%	1.5%
	Graduate Student	0.0%	0.0%	0.0%	0.0%
	Part-time Researcher	0.0%	0.0%	0.0%	0.0%
	Unknown	0.0%	0.0%	0.2%	0.0%
	Total	100.0%	100.0%	100.0%	100.0%

2.3 Age

The average age of all the researchers is 45.0. Broken down by field of specialization, the average age is highest in wide area (50.1), followed in descending order by economics (49.3), arts (48.5), and law (47.3). Generally speaking, the average age was higher among researchers in the humanities and social sciences. The average age in other fields was as follows: interdisciplinary area (44.7), engineering (44.4), agriculture (43.9) and science (43.4). The field with the lowest average age was medicine, at 40.6. When the above are broken down by institution governing authority, in each case the average age of researchers at private institutions is higher that that of researchers at national and municipal institutions (Figure 3). Also, the average age among men is 45.61 and that among women is 42.26 (Figure 4).

Broken down by institution type, the average age of researchers at inter-university research institutes is the lowest at 42.6. 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 (50.3) 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 56.2, among whom that among professors at inter-university research institutes is the lowest, at 53.2, and that among professors at junior colleges is the highest, at 57.9. Overall, the average age of assistant professors is 45.1, that of lecturers 41.2, and that of research associates 36.3. 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 research institutes the order is reversed, with those affiliated with private institutions being the youngest, on average. Incidentally, the average age of university presidents is 63.7 at national institutions, 65.7 at municipal institutions, and 66.4 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 30.7 (Table 4).

The age composition of researchers overall is as follows: those aged 31 to 40 are the largest group, at 25.3% of the total; they are followed by the 51 to 60 group (24.7%), the 41 to 50 group (24.5%), the 30 and below group (14.1%), the 61 to 70 group (10.6%), and the 71 and above group (0.7%).

The breakdown by field of specialization shows that 48.4% of researchers in medicine and 45.4% 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 wide area (23.4%), economics (27.1%), arts (27.1%) (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.

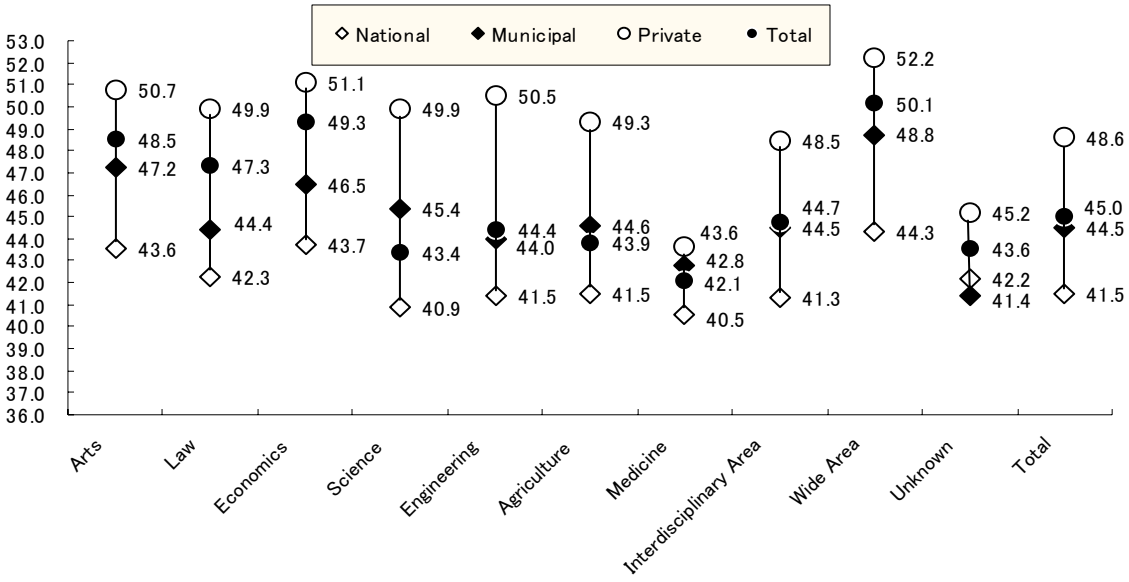

Figure 3　Average Age of Researchers by Field of Specialization

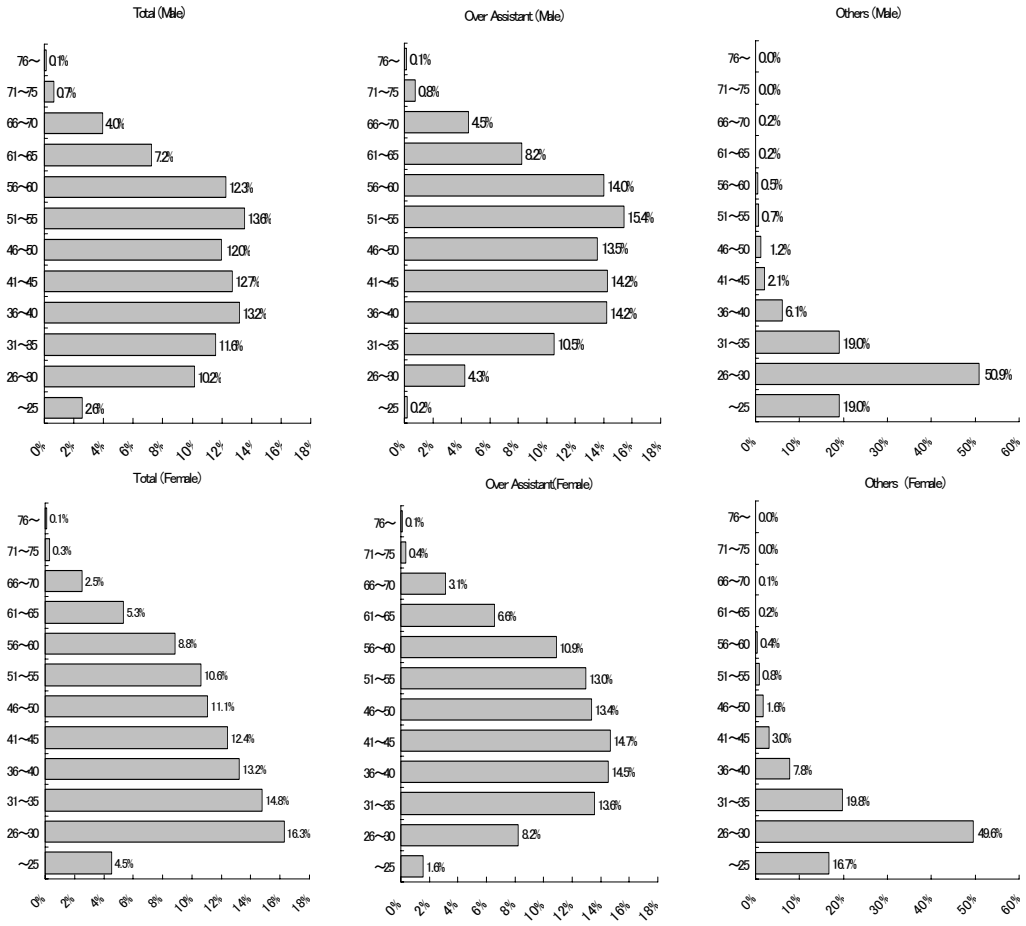

Figure 4　Age Composition of Researchers by Gender

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	54.1	43.4	40.5	36.7	63.7	30.3	41.2
	Municipal	54.7	44.5	41.1	36.3	65.6	32.3	44.1
	Private	57.6	46.4	41.7	35.9	66.4	36.3	48.3
	Total	56.1	44.8	41.3	36.4	65.6	30.7	44.5
Junior Colleges	National	53.8	47.5	42.2	37.7	56.5		47.0
	Municipal	55.5	46.3	40.0	35.4	66.8		46.6
	Private	58.3	48.4	42.3	33.3	67.5		50.8
	Total	57.9	48.1	42.1	34.3	67.3		50.3
Colleges of Technology	National	55.3	43.5	35.0	33.9		28.0	45.9
	Municipal	54.0	39.5	32.3	29.2			44.8
	Private	57.5	50.0	37.1	29.8	61.0		48.5
	Total	55.3	43.4	34.9	33.7	61.0	28.0	45.9
Inter-University Research Institutes		53.2	44.2	31.5	36.6	70.0	30.4	42.6
Government Research Institutes								44.3
Private Scientific Research Institutes								46.7
Total	National	54.1	43.4	39.9	36.6	63.7	30.3	41.5
	Municipal	54.8	44.6	40.5	36.1	66.0	32.3	44.5
	Private	57.7	46.9	41.8	35.7	66.8	36.6	48.6
	Total	56.2	45.1	41.2	36.3	66.1	30.7	45.0

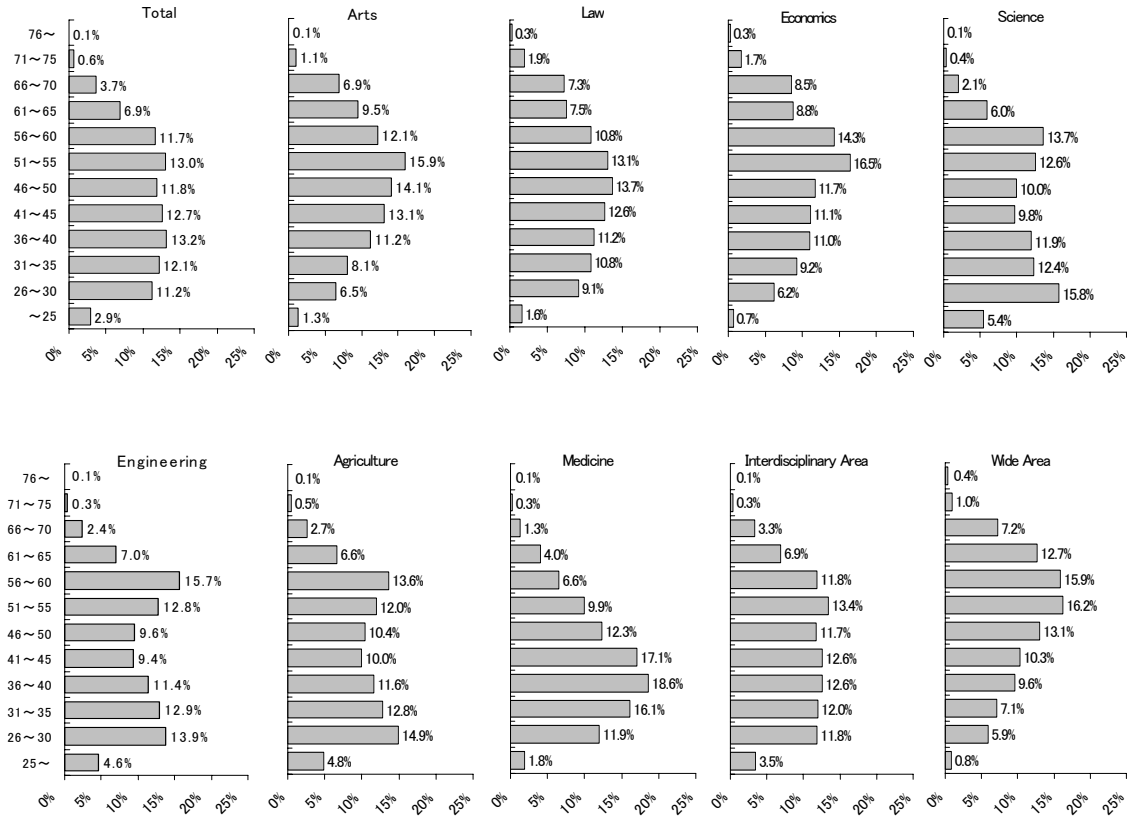

Figure 5　Age Composition of Researchers by Field of Specialization

2.4 Gender

Among all the researchers, 82.5% (115,182 persons) are men and 17.5% (24,377 persons) are women.

Broken down by field of specialization, the proportion of women is relatively high in three fields: wide area (30.4%), arts (27.3%), and interdisciplinary area (21.6%). In contrast, the proportion of women is low in the fields of engineering (3.7%), economics (8.1%), science (7.9%), law (12.6%), and agriculture (13.4%). 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 44.4% 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 4.2% 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 50% 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).

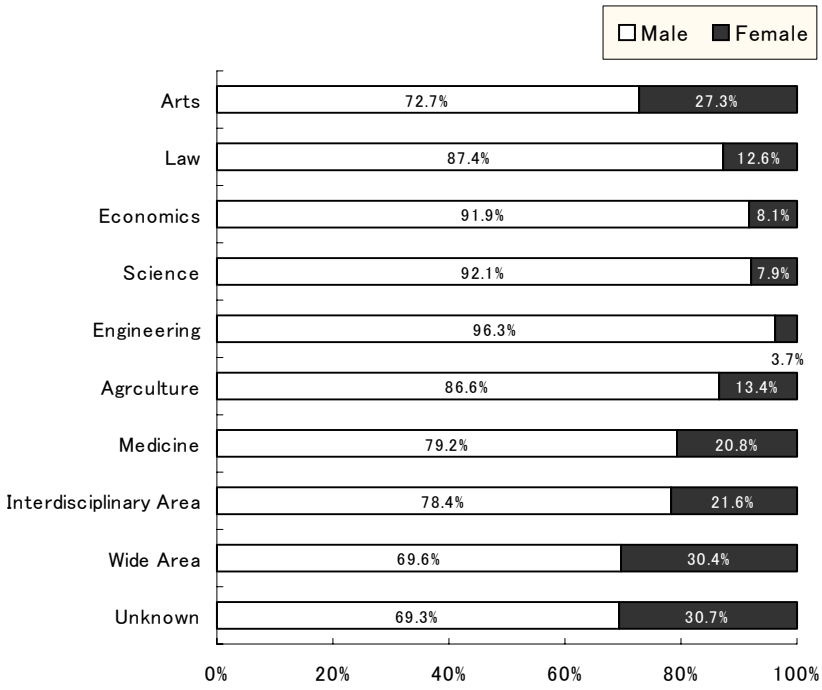

Figure 6　Gender Composition of Researchers by Field of Specialization

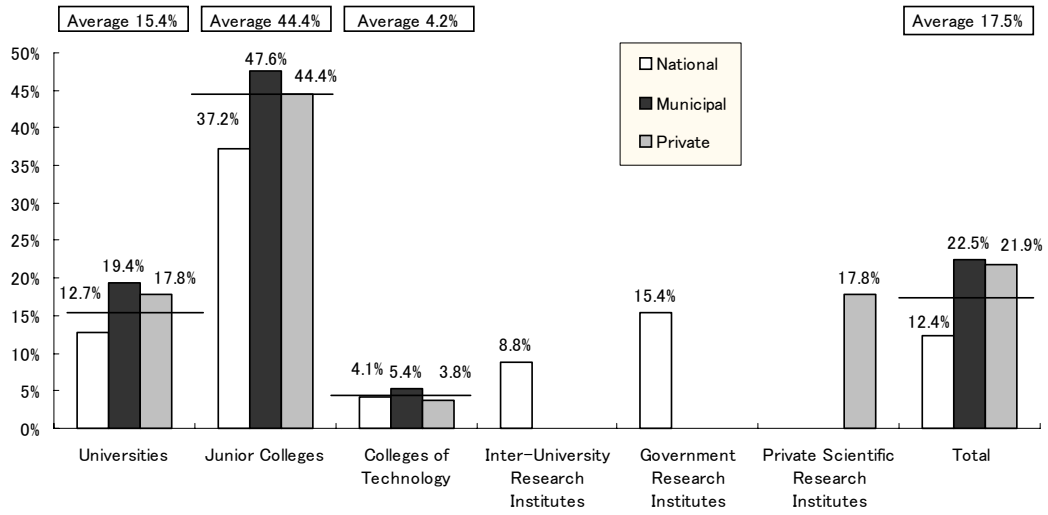

Figure 7　Ratio of Female Researchers by Institution Type

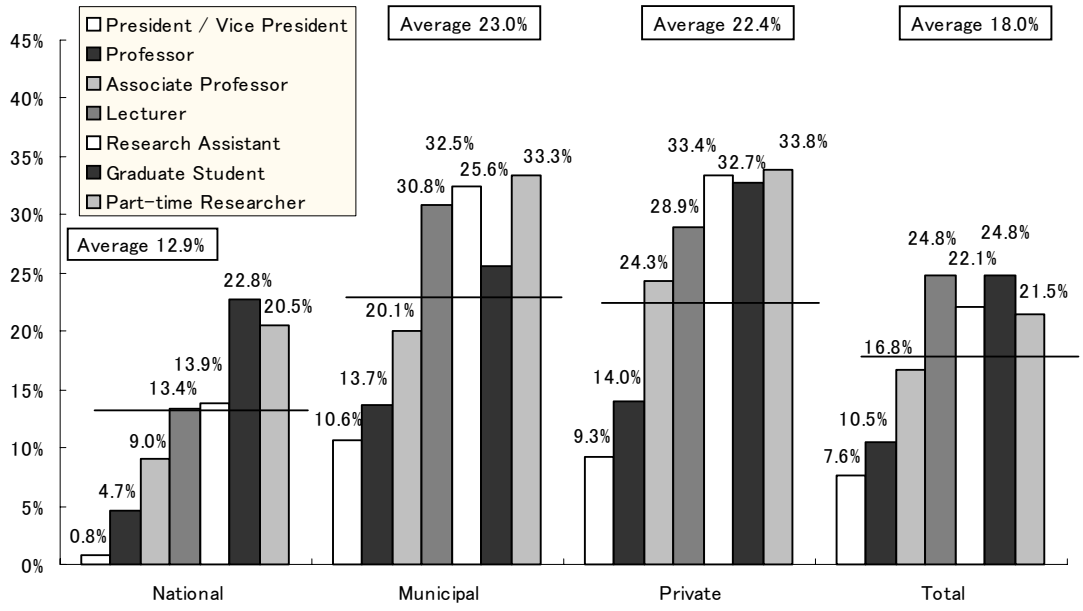

Figure 8　Ratio of Female Researchers by Professional Title

2.5 Non-Japanese Names

Of all the researchers, 3,419 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 (3.9%), agriculture (3.2%), and engineering (3.3%), followed by economics (2.6%), wide area (3.0%), and law (2.0%) (Figure 9). Note that the 1,139 researchers with non-Japanese names in the field of arts account for 33.3% 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 inter-university research institutes and junior colleges 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 12.4% 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. However, the order is reversed among research associates alone (Figure 11).

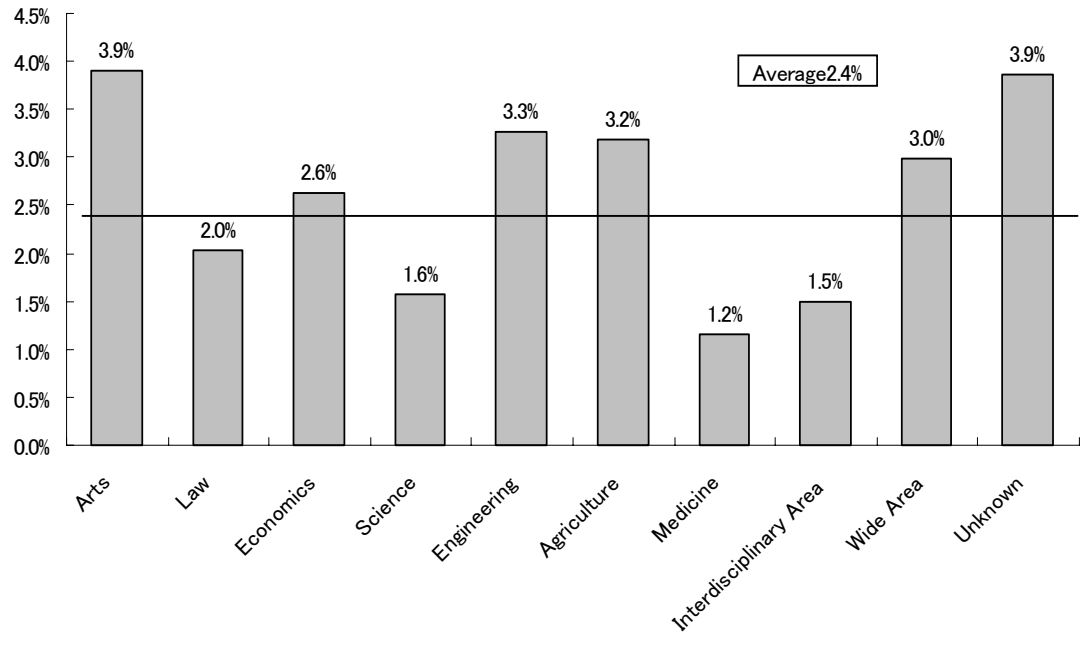

Figure 9　Ratio of Researchers with Non-Japanese Names by Field of Specialization

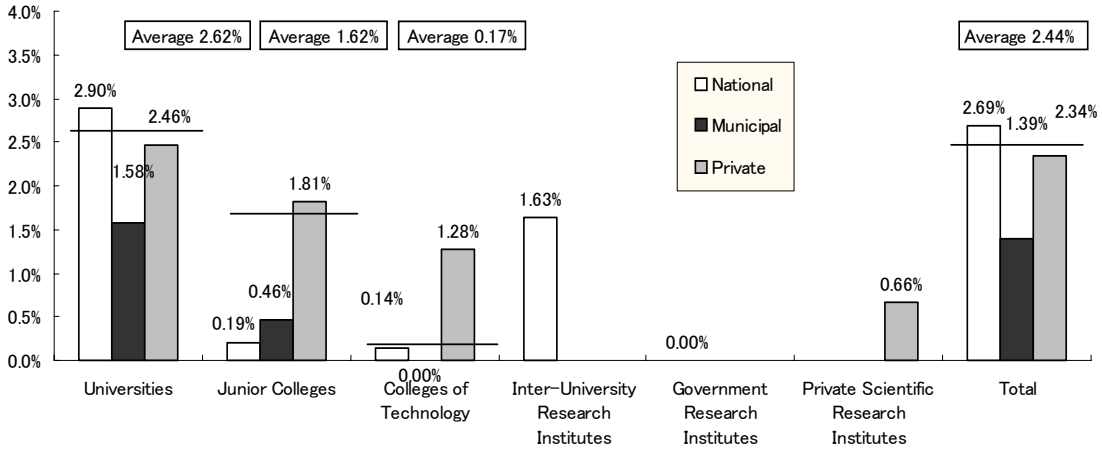

Figure 10　Ratio of Researchers with Non-Japanese Names by Institution Type

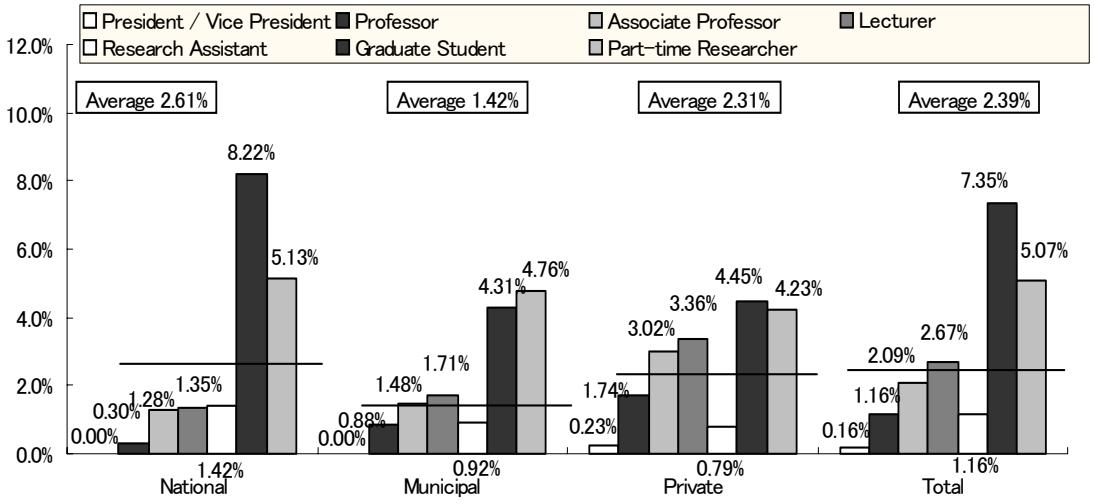

Figure 11　Ratio of Researchers with Non-Japanese Names by Professional Title

3. Academic Background

3.1 Last Degree Course Completed

Regarding the last degree course completed by the researchers, 102,057 persons (73.0%) hold a graduate degree. Of these, 58,457 (41.8% of the total) hold a doctorate degree and 41,787 (30.0% of the total) hold a master's degree. Also, 32,717 (23.4% of the total) have completed only an undergraduate degree and 5,099 (3.6% 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 91.1%, followed by economics, at 87.7%. Next come law and arts, at 86.3% and 85.2% respectively. These are followed in descending order by engineering (82.1%), agriculture (81.5%), interdisciplinary area (72.7%), and wide area (50.3%). Medicine is the lowest, at 47.6% (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 inter-university research institutes and government research institutes of the Ministry of Education, Science, Sports, and Culture, where the figures are 91.1% and 87.6%, respectively. These are followed in descending order by universities (74.9%), colleges of technology (69.3%), junior colleges (54.2%) and private scientific research institutes (53.8%) (Figure 13).

A look at the ratio of researchers graduated from institutions in Japan and overseas institutions shows that 7,205 of the respondents, or 5.2% of the total, are graduates of overseas institutions (Table 5). By field of specialization, their proportions are largest in arts (10.7%), wide area (10.2%), economics (7.1), and law (6.7%). By type of institution, graduates of overseas institutions are comparatively numerous at junior colleges (5.4%) and universities (5.3%), 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	29,179	13,653	10,753	458	24,864	3,751	564	24,899	85.3%	3,134	10.7%
Law	3,890	2,269	1,034	55	3,358	482	50	3,459	88.9%	259	6.7%
Economics	6,968	4,544	1,480	89	6,113	791	64	6,201	89.0%	492	7.1%
Science	14,400	8,098	4,918	107	13,123	1,117	160	13,468	93.5%	435	3.0%
Engineering	21,605	8,428	9,140	179	17,747	3,302	556	20,087	93.0%	896	4.1%
Agriculture	7,178	2,835	2,928	86	5,849	1,209	120	6,701	93.4%	252	3.5%
Medicine	32,393	10,973	3,931	505	15,409	15,752	1,232	30,044	92.7%	679	2.1%
Interdisciplinary Area	18,401	6,798	6,359	221	13,378	4,440	583	17,139	93.1%	620	3.4%
Wide Area	2,417	452	697	66	1,215	926	276	2,002	82.8%	247	10.2%
Unknown	3,442	407	547	47	1,001	947	1,494	1,865	54.2%	191	5.5%
Total	139,873	58,457	41,787	1,813	102,057	32,717	5,099	125,865	90.0%	7,205	5.2%

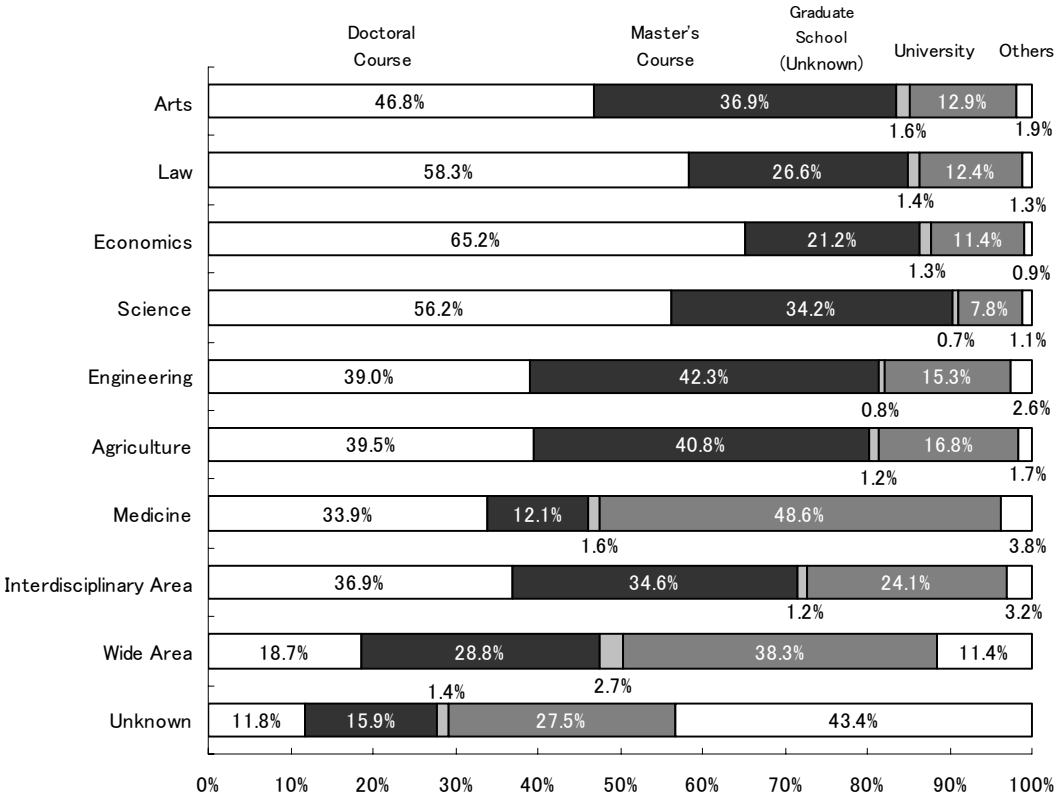

Figure 12　Last Degree Course Completed by Field of Specialization

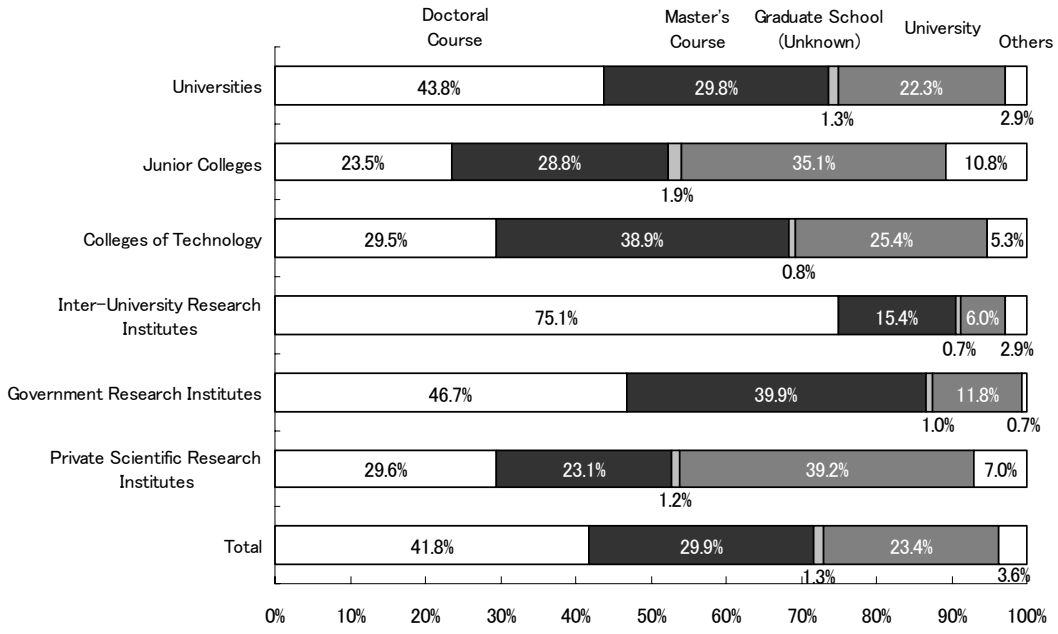

Figure 13　Last Degree Course Completed by Institution Type

3.2 Researchers with Doctorate Degrees

The number of the researchers with doctorate degrees is 67,502, which amounts to 48.3% of the total. Broken down by type degree, doctors of engineering are the most numerous, at 26.2%. They are followed in descending order by persons with doctorates in medicine (24.8%), science (17.6%), and agriculture (7.0%). 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 (71.8%), agriculture (66.2%), engineering (65.7%), medicine (63.4%), and interdisciplinary area (46.5%). In contrast, the proportion of researchers with doctorate degrees is extremely low in the fields of arts, law, and economics, being 17.5%, 23.3%, and 30.2%, respectively (Figure 15).

Broken down by institution type, the proportion of researchers with doctorate degrees is highest at inter-university research institutes, at 81.5%. This is followed in descending order by universities (51.1%) and private scientific research institutes (46.4%). The proportion is comparatively low at colleges of technology (44.8%), government research institutes of the Ministry of Education, Science, Sports, and Culture (31.7%), and junior colleges (17.7%). Note that researchers with doctorate degrees account for the majority, 55.3%, 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 67.4%. These are followed in descending order by professors (60.5%), associate professors (60.2%), lecturers (61.9%), and research assistants (57.8%). Also, the proportion of researchers with doctorate degrees is highest of all among part-time researchers at 77.7% (Figure 17, Table 6).

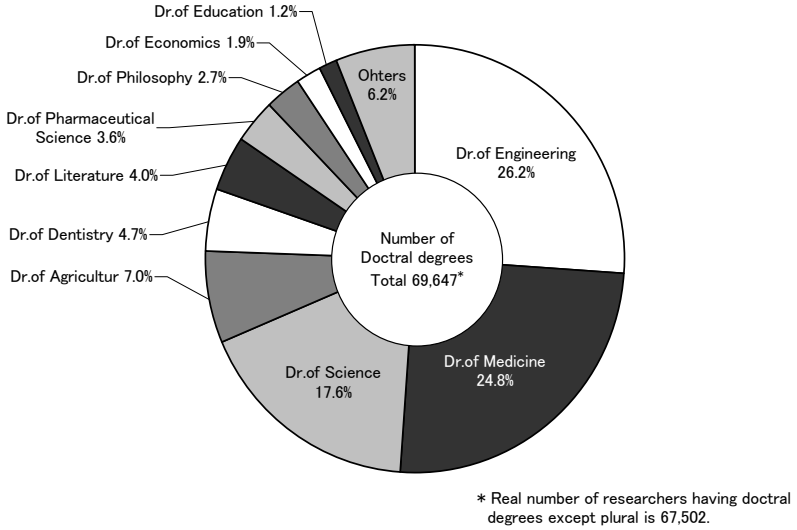

Figure 14　Researchers with Doctorate Degrees

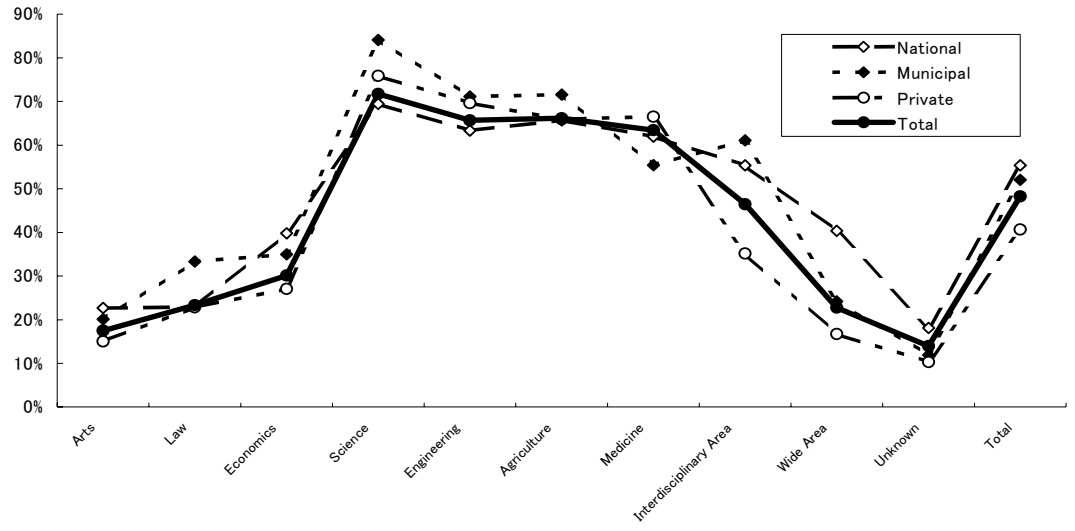

Figure 15　Ratio of Researchers with Doctorate Degrees by Field of Specialization / by Institution Governing Authority

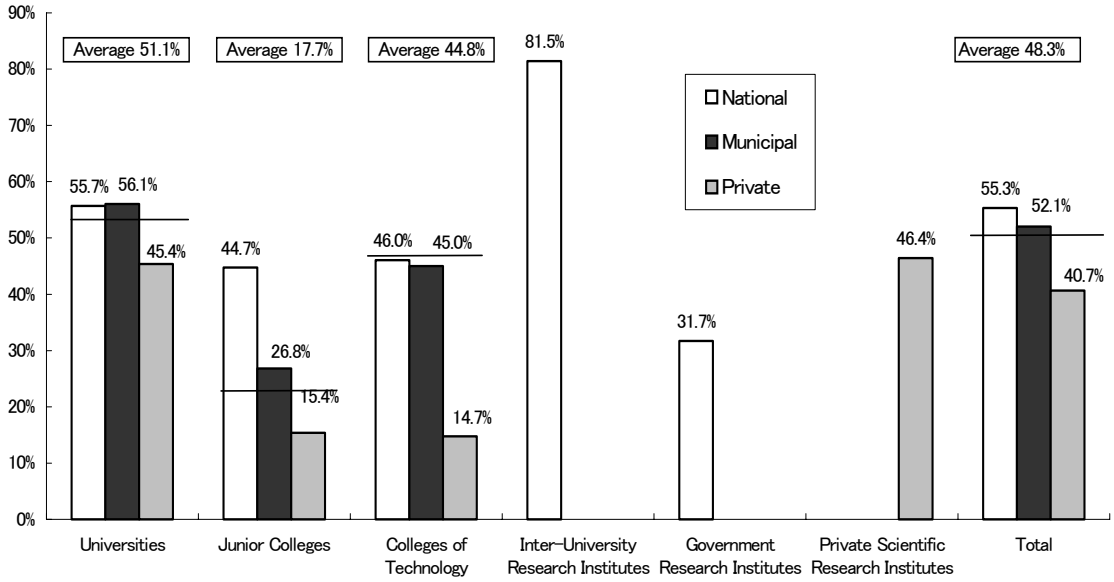

Figure 16　Ratio of Researchers with Doctorate Degrees by Institution Type　/ by Institution Governing Authority

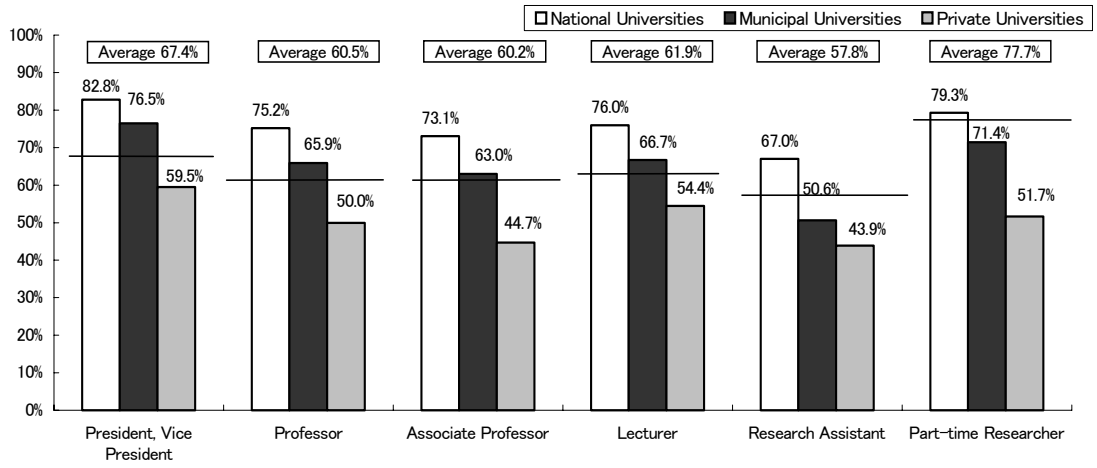

Figure 17　Ratio of University Researchers with Doctorate Degrees by Professional Title

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	122	101	82.8%
	Professor	15,722	11,823	75.2%
	Associate Professor	12,836	9,379	73.1%
	Lecturer	3,726	2,832	76.0%
	Research Assistant	11,921	7,989	67.0%
	Part-time Researcher	1,074	852	79.3%
Municipal Universities	President, Vice President	34	26	76.5%
	Professor	2,227	1,468	65.9%
	Associate Professor	1,704	1,074	63.0%
	Lecturer	995	664	66.7%
	Research Assistant	1,566	793	50.6%
	Part-time Researcher	21	15	71.4%
Private Universities	President, Vice President	279	166	59.5%
	Professor	23,217	11,597	50.0%
	Associate Professor	10,985	4,907	44.7%
	Lecturer	7,764	4,226	54.4%
	Research Assistant	7,069	3,105	43.9%
	Part-time Researcher	60	31	51.7%
Total	President, Vice President	435	293	67.4%
	Professor	41,166	24,888	60.5%
	Associate Professor	25,525	15,360	60.2%
	Lecturer	12,485	7,722	61.9%
	Research Assistant	20,556	11,887	57.8%
	Part-time Researcher	1,155	898	77.7%

4. Current Research Topics

The survey subjects were asked what research topics they were currently working on, and a total of 242,957 responses were received. This works out to an average of 1.74 research topics per researcher. The averages per researcher at national, municipal, and private institutions were 1.79, 1.81, and 1.67 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 (23.9%) and international collaboration (10.9%) was higher in the field of science than in any other, accounting for 34.8% of the total for all collaborative research involving outside partners. In contrast, in medicine the proportion of collaboration research is high at 65.8%, 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).

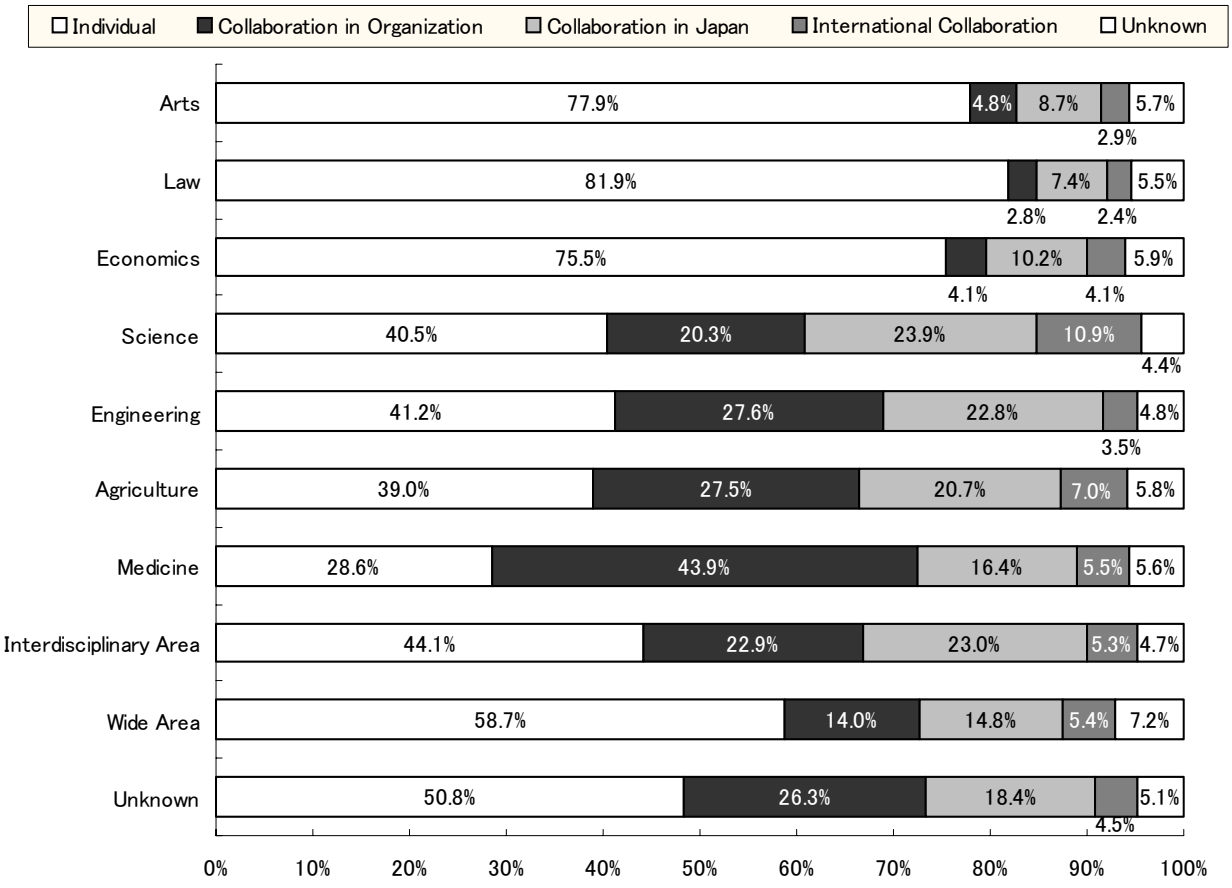

Figure 18　Research Topics and Status of Research by Field of Research

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 9,321, or 6.7%. The figures broken down by institution governing authority were national institutions 7.6%, municipal institutions 6.7%, and private institutions 8.7% (Table 7).

Broken down by field of specialization, the figures were as follows, in descending order: law (11.0%), science (10.1%), arts (8.9%), economics (8.8%), agriculture (8.4%), Wide area (5.7%), engineering (5.6%), and interdisciplinary area (5.6%). Medicine had the lowest percentage at 3.5%. Also, an examination of the above categories broken down by institution governing authority indicates that in the humanities and social sciences the percentage of scholars traveling abroad to perform research activities was highest at national institutions, lower at municipal institutions, and lowest at private institutions. However, there was no particular trend of this sort among researchers in the natural sciences, interdisciplinary area and wide area (Table 7).

The breakdown by institution type shows that inter-university research institutes (14.3%) and government research institutes of the Ministry of Education, Science, Sports, and Culture (16.0%) have the highest percentages. These are followed in descending order by universities (7.1%), private scientific research institutes (3.7%), junior colleges (3.1%) and colleges of technology (2.5%). There are therefore significant differences between different types of institutions. On the other hand, we can say that except for junior colleges, there is relatively little difference associated with institution governing authority among institutions of the same type (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 56 to 60 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	922	141	1,543	2,606
	Ratio	11.0%	9.6%	8.0%	8.9%
Law	No. of Researchers	161	21	247	429
	Ratio	13.5%	11.9%	9.8%	11.0%
Economics	No. of Researchers	165	43	407	615
	Ratio	11.5%	10.0%	8.0%	8.8%
Science	No. of Researchers	1,140	76	236	1,452
	Ratio	11.3%	10.9%	6.5%	10.1%
Engineering	No. of Researchers	806	65	347	1,218
	Ratio	5.8%	6.2%	5.2%	5.6%
Agriculture	No. of Researchers	463	28	112	603
	Ratio	9.9%	5.3%	5.7%	8.4%
Medicine	No. of Researchers	638	114	367	1,119
	Ratio	4.3%	3.8%	2.5%	3.5%
Interdisciplinary Area	No. of Researchers	610	74	353	1,037
	Ratio	6.7%	7.7%	4.2%	5.6%
Wide Area	No. of Researchers	30	14	93	137
	Ratio	5.3%	8.9%	5.5%	5.7%
Unknown	No. of Researchers	53	10	42	105
	Ratio	3.4%	4.1%	2.6%	3.1%
Total	No. of Researchers	4,988	586	3,747	9,321
	Ratio	7.6%	6.7%	5.7%	6.7%

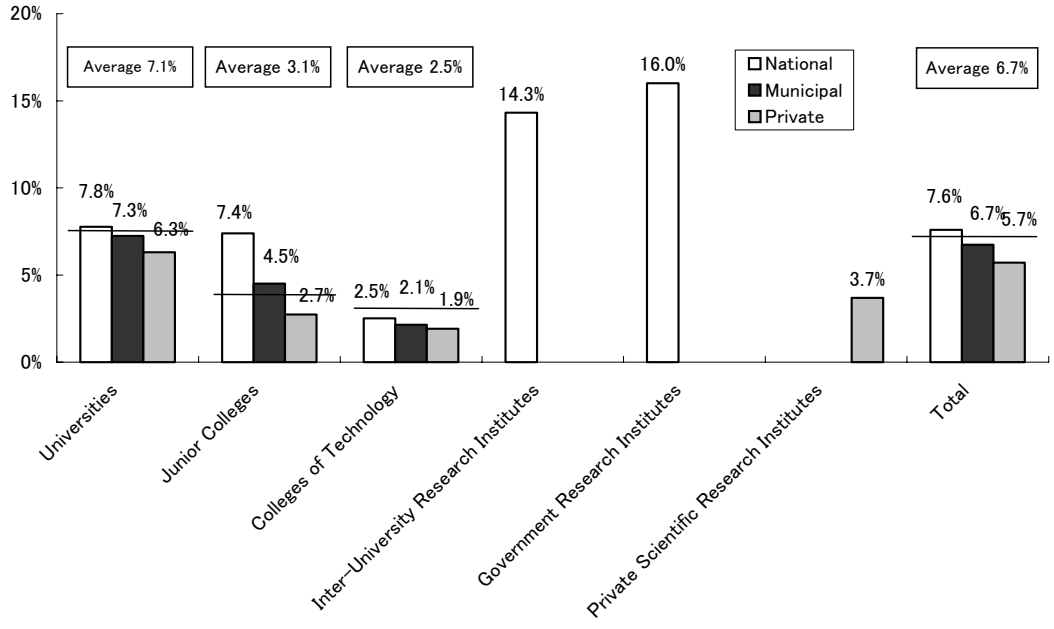

Figure 19　Ratio of Researchers Who Have Traveled Abroad by Institution Type / by Institution Governing Authority

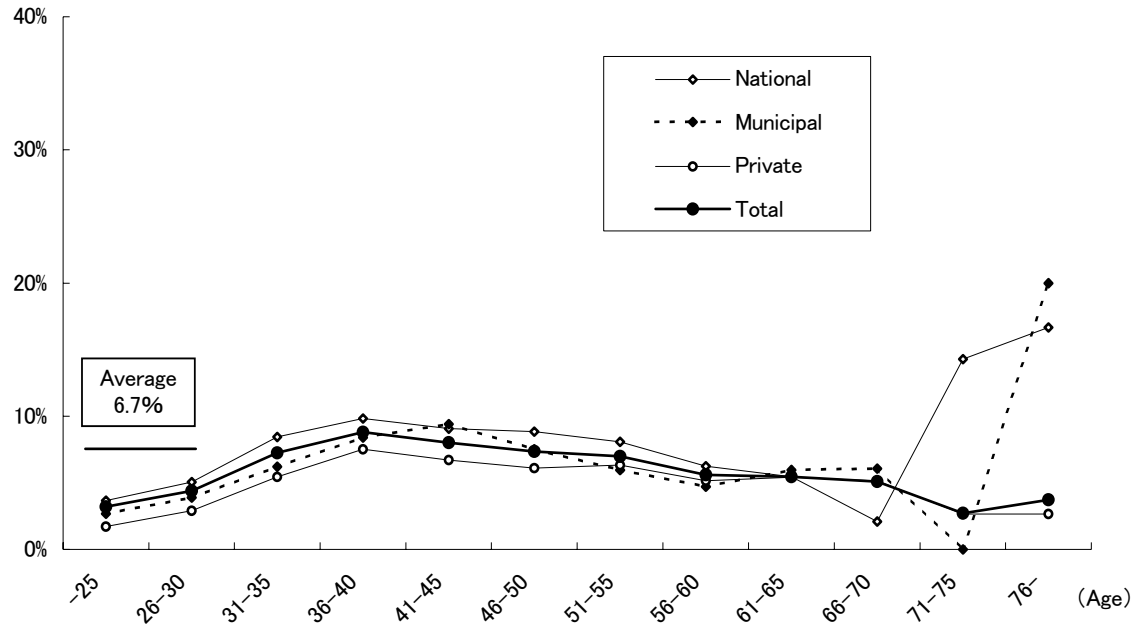

Figure 20　Ratio of Researchers Who Have Traveled Abroad by Age / by Institution Governing Authority

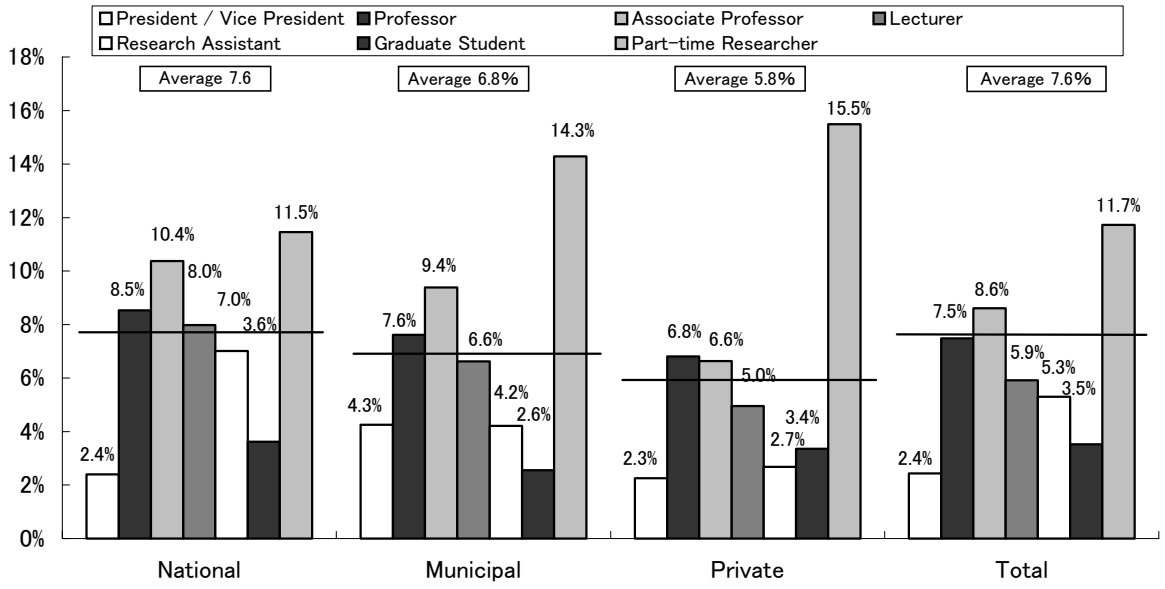

Figure 21　Ratio of Researchers Who Have Traveled Abroad by Professional Title / by Institution Governing Authority

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 24,472, or 17.5%. The figures broken down by institution governing authority were national institutions 21.1%, municipal institutions 17.1%, and private institutions 13.9%. 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 (26.1%), science (23.3%), medicine (21.3%), and agriculture (16.4%), all of which were above the overall average with the exception of agriculture. In contrast, the percentages tended to be low in fields in the humanities and social sciences, such as (in descending order) law (11.2%), economics (10.3%), and arts (8.7%). Also, an examination of the above categories broken down by institution governing authority indicates that except for sciences and engineering, the percentage of scholars attending international conferences, etc., overseas was highest in all fields at national institutions (Table 8).

The breakdown by institution type shows that inter-university research institutes (41.8%) have the highest percentage, followed in descending order by government research institutes of the Ministry of Education, Science, Sports, and Culture (19.6%), universities (18.8%), and private scientific research institutes (12.4%). The lowest percentages are for colleges of technology and junior colleges, at 9.7% and 5.1%, 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. For all professional title categories the percentages were generally higher at national institutions, followed by municipal and private institutions, in that order (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 18% 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 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 41 to 45 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 (27.5%) 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)(23.7%) also higher than that for municipal or private institutions. On the other hand, at private institutions the proportion accounted for by affiliated institutions (35.8%) was much higher than that at national or municipal institutions. In the case of municipal institutions researchers covering their own expenses (34.7%) 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 (38.9% and 37.4%, respectively). Also, a high proportion (32.1%) 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 (36.2%) 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	882	123	1,544	2,549
	Ratio	10.6%	8.4%	8.0%	8.7%
Law	No. of Researchers	136	19	281	436
	Ratio	11.4%	10.7%	11.1%	11.2%
Economics	No. of Researchers	164	49	506	719
	Ratio	11.5%	11.4%	9.9%	10.3%
Science	No. of Researchers	2,382	176	792	3,350
	Ratio	23.6%	25.2%	21.9%	23.3%
Engineering	No. of Researchers	3,733	333	1,581	5,647
	Ratio	26.9%	31.5%	23.6%	26.1%
Agriculture	No. of Researchers	904	62	209	1,175
	Ratio	19.4%	11.7%	10.6%	16.4%
Medicine	No. of Researchers	3,472	511	2,914	6,897
	Ratio	23.4%	17.2%	20.0%	21.3%
Interdisciplinary Area	No. of Researchers	2,017	192	1,093	3,302
	Ratio	22.3%	20.0%	13.0%	17.9%
Wide Area	No. of Researchers	67	9	123	199
	Ratio	11.8%	5.7%	7.3%	8.2%
Unknown	No. of Researchers	114	12	72	198
	Ratio	7.3%	4.9%	4.4%	5.8%
Total	No. of Researchers	13,871	1,486	9,115	24,472
	Ratio	21.1%	17.1%	13.9%	17.5%

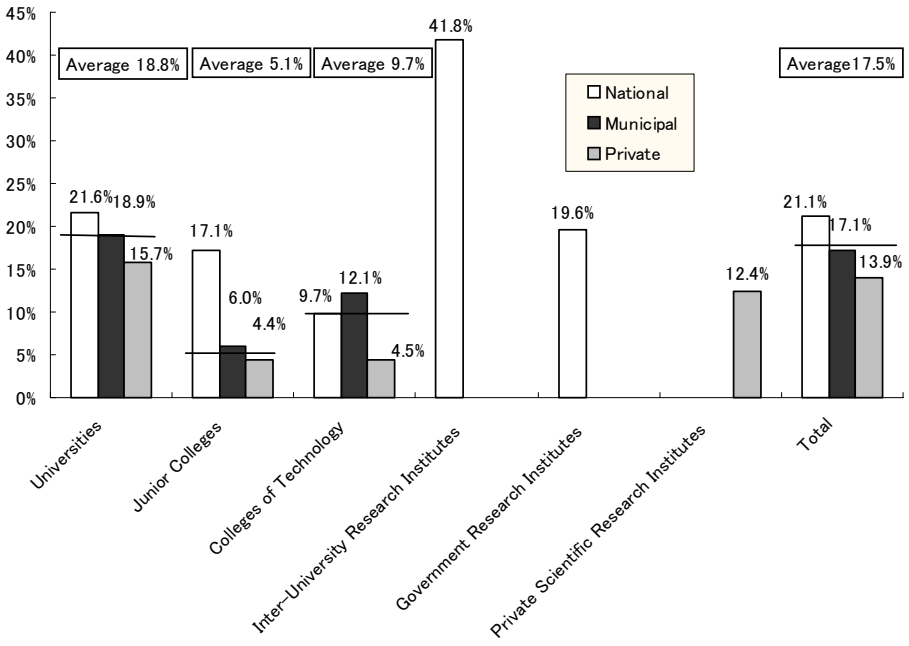

Figure 22　Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Institution Type / by Institution Governing Authority

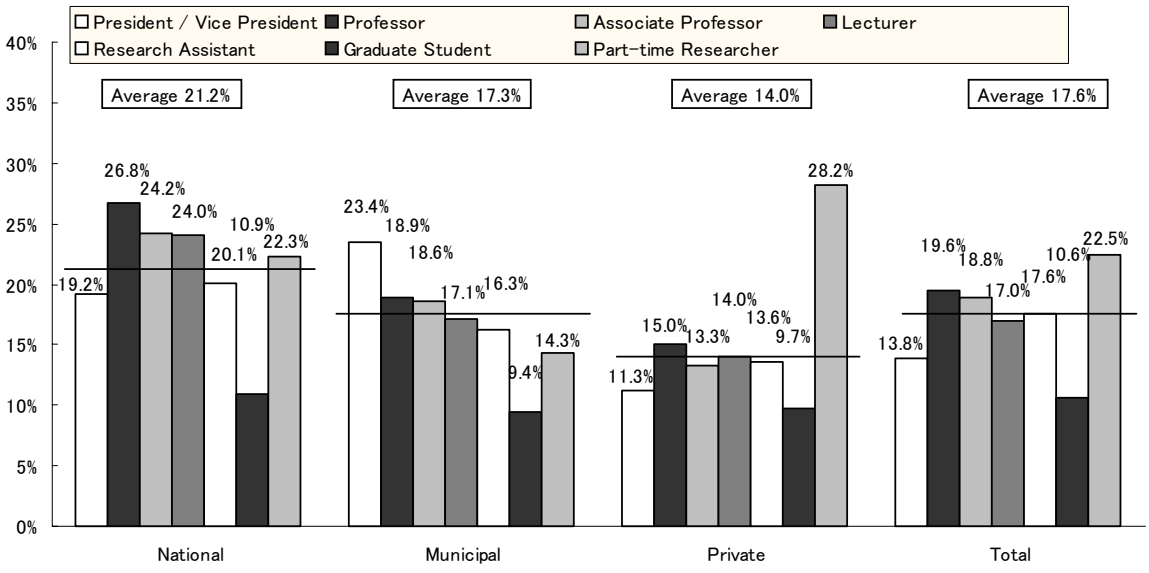

Figure 23　Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Professional Title

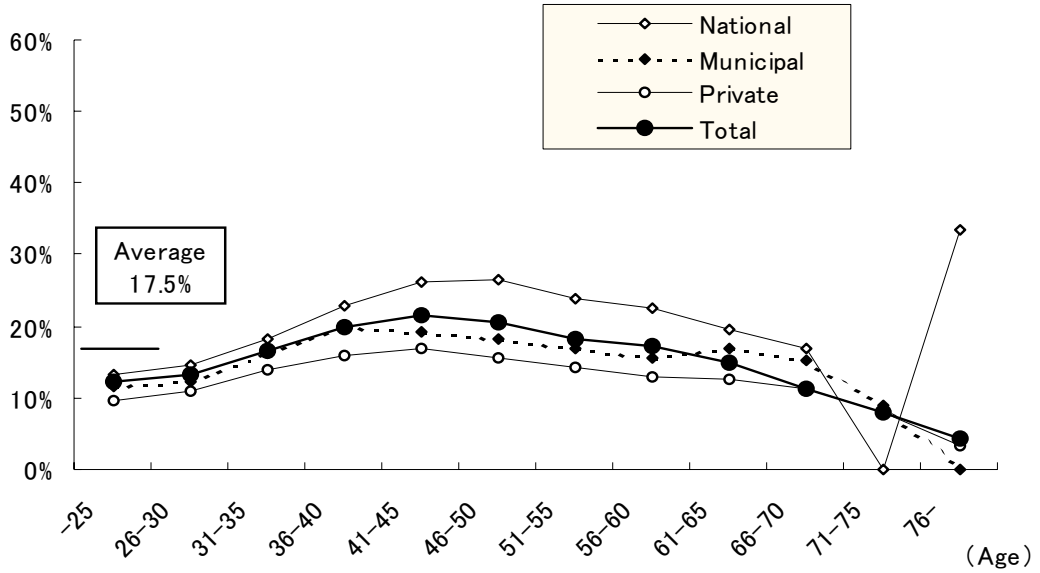

Figure 24　Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Age / by Institution Governing Authority

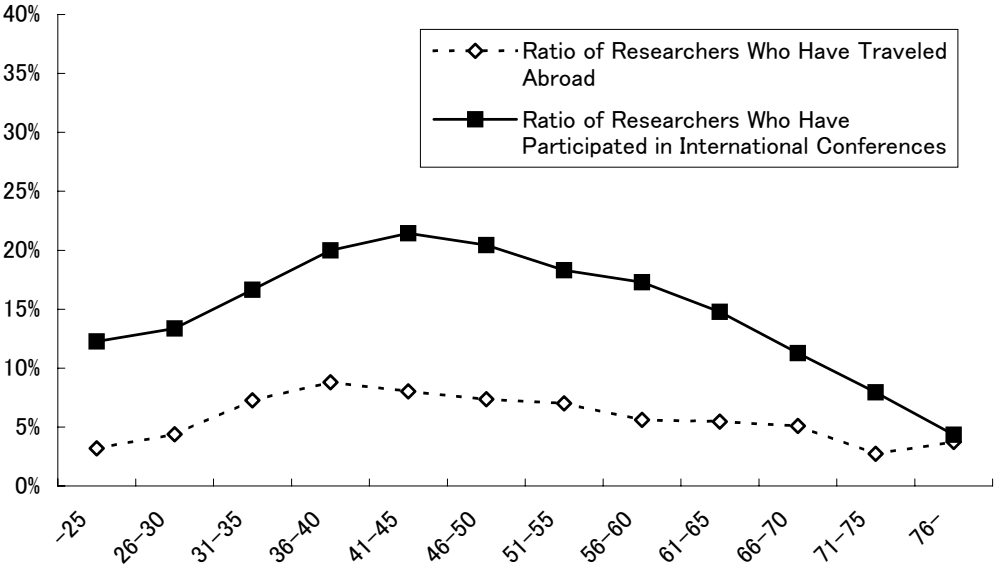

Figure 25　Ratio of Researchers Who Have Traveled Abroad and Ratio of Researchers Who Have Participated in International Conferences, Etc., Overseas by Age

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 22,612, or 16.2%. The figures broken down by institution governing authority were national institutions 20.2%, municipal institutions 16.0%, and private institutions 12.1%. 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 (26.5%), science (22.9%), medicine (19.5%), and agriculture (16.3%), 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) economics (7.2%), law (6.5%), and arts (6.4%). 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(except for law, science, engineering) at national institutions (Table 9).

The breakdown by institution type shows that inter-university research institutes (39.2%) have the highest percentage, followed in descending order by universities (17.4%), government research institutes of the Ministry of Education, Science, Sports, and Culture (16.3%), and private scientific research institutes (12.1%). The lowest percentages are for colleges of technology and junior colleges, at 10.5% and 3.8%, respectively (Figure 26).

Broken down by professional title, the percentages of professors, 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 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 16% 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 was highest in all age groups. On the other hand, the 41 to 45 group in the percentage with 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	709	95	1,055	1,859
	Ratio	8.5%	6.5%	5.4%	6.4%
Law	No. of Researchers	84	14	155	253
	Ratio	7.0%	7.9%	6.1%	6.5%
Economics	No. of Researchers	135	32	335	502
	Ratio	9.4%	7.5%	6.6%	7.2%
Science	No. of Researchers	2,351	175	777	3,303
	Ratio	23.3%	25.1%	21.5%	22.9%
Engineering	No. of Researchers	3,836	341	1,552	5,729
	Ratio	27.7%	32.3%	23.2%	26.5%
Agriculture	No. of Researchers	893	64	211	1,168
	Ratio	19.1%	12.1%	10.7%	16.3%
Medicine	No. of Researchers	3,126	469	2,723	6,318
	Ratio	21.0%	15.8%	18.7%	19.5%
Interdisciplinary Area	No. of Researchers	1,977	182	977	3,136
	Ratio	21.8%	19.0%	11.6%	17.0%
Wide Area	No. of Researchers	58	10	97	165
	Ratio	10.2%	6.4%	5.7%	6.8%
Unknown	No. of Researchers	113	10	56	179
	Ratio	7.3%	4.1%	3.4%	5.2%
Total	No. of Researchers	13,282	1,392	7,938	22,612
	Ratio	20.2%	16.0%	12.1%	16.2%

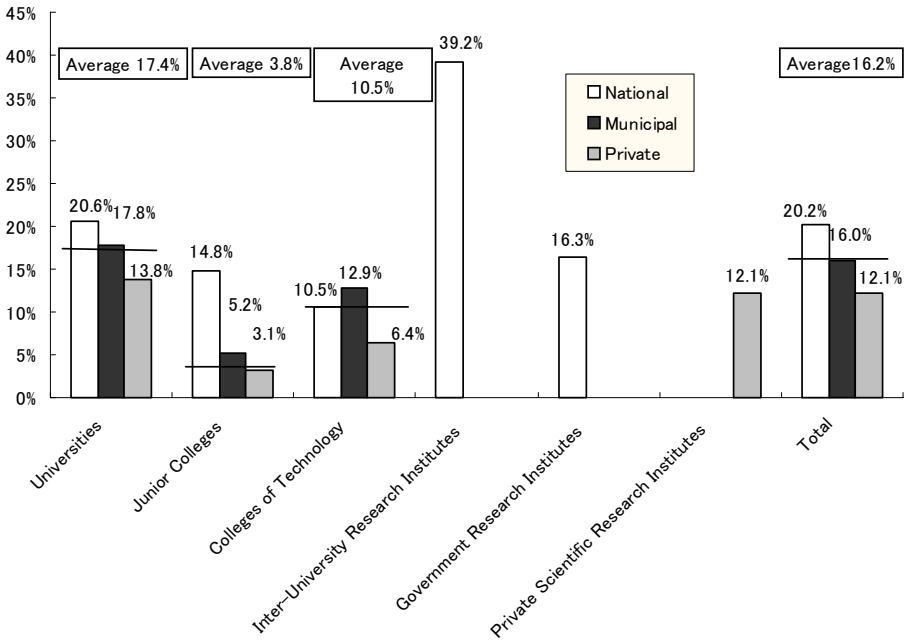

Figure 26　Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Institution Type / by Institution Governing Authority

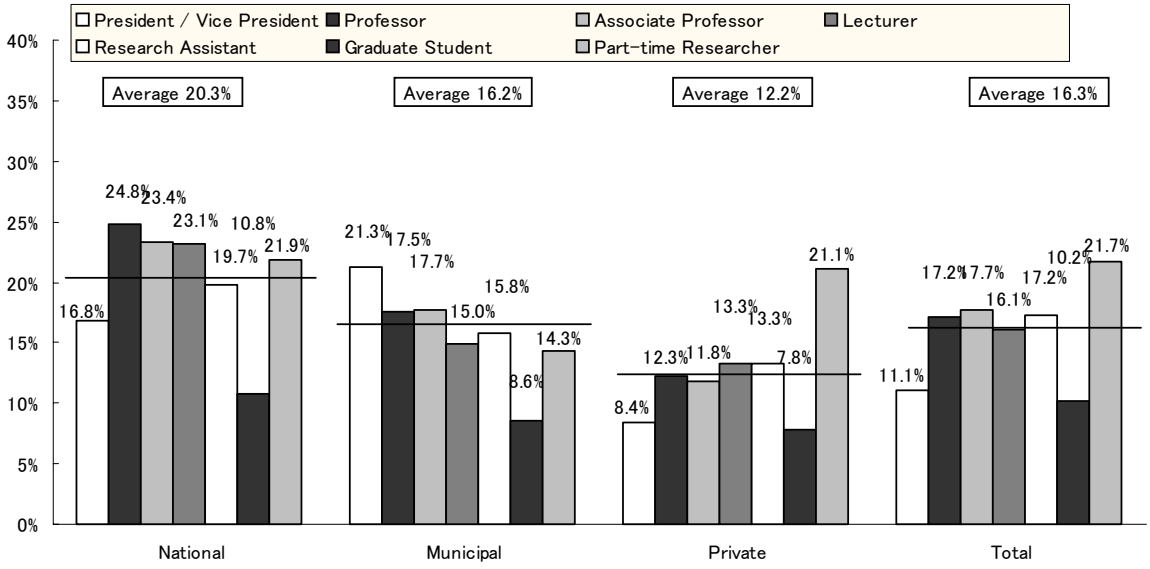

Figure 27　Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Professional Title

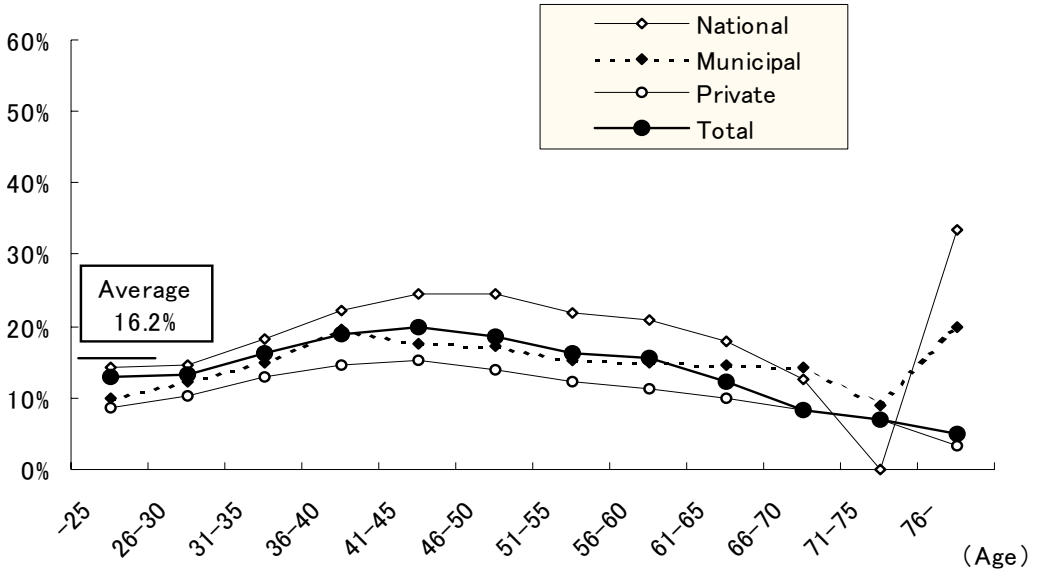

Figure 28　Ratio of Researchers Who Have Spoken at International Conferences, Etc., Overseas by Age / by Institution Governing Authority

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

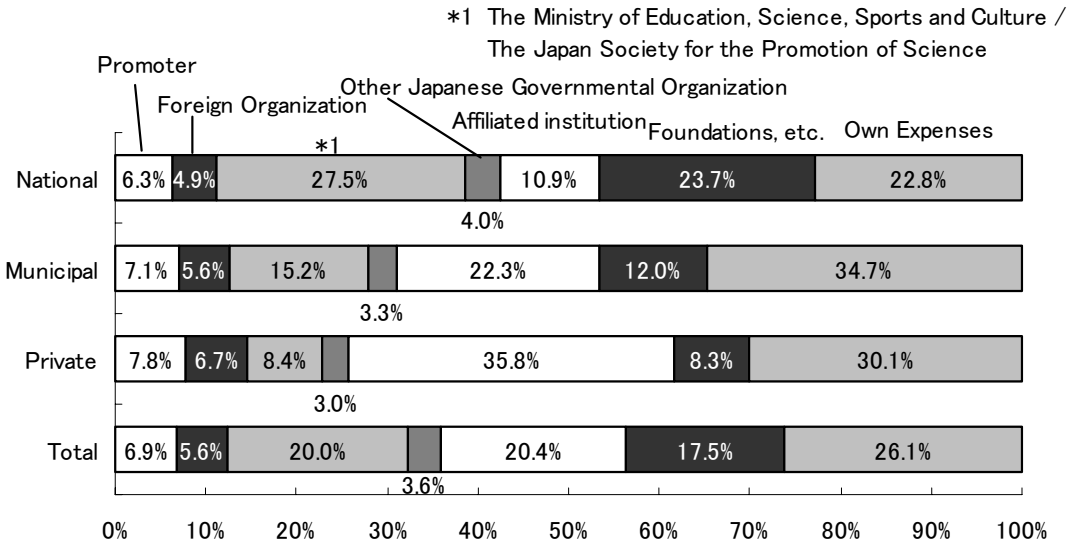

Figure 30　Party Covering Expenses for Participation in International Conferences, Etc., Overseas by Institution Governing Authority

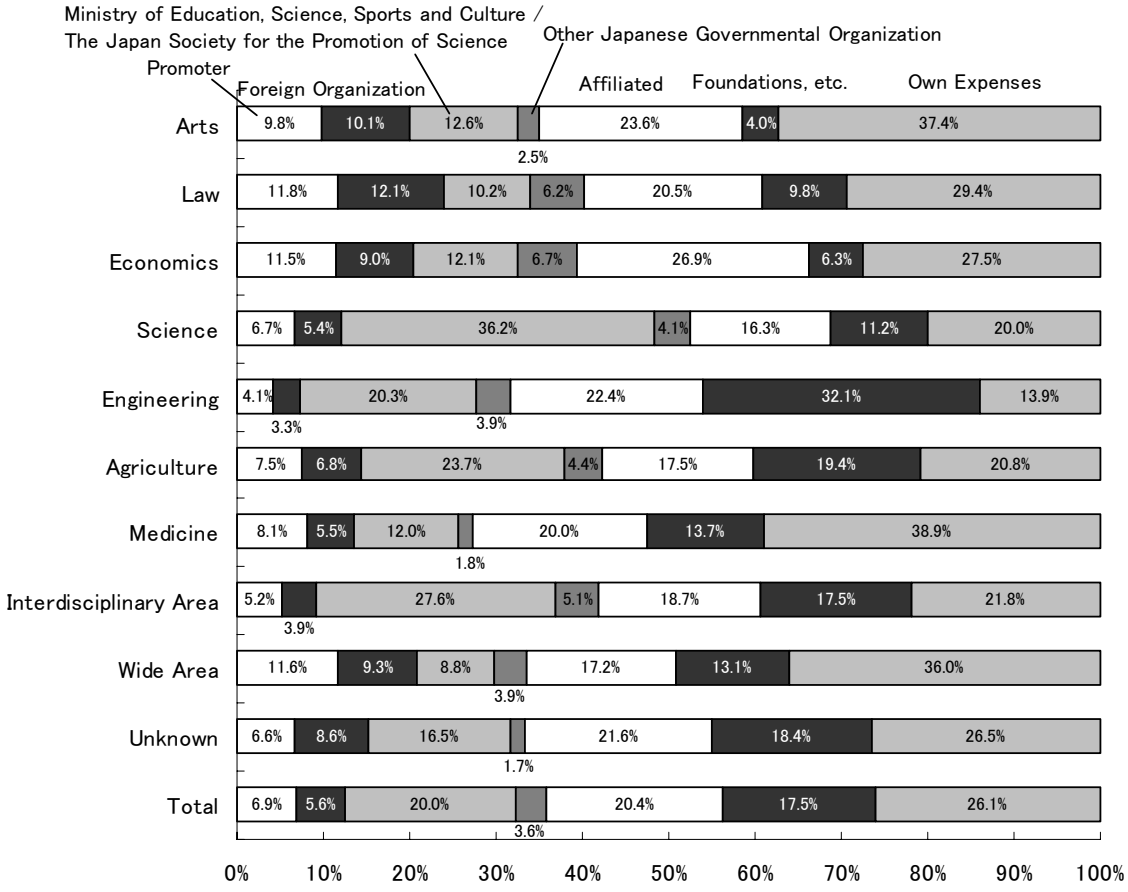

Figure 31　Party Covering Expenses for Participation in International Conferences, Etc., Overseas by Field of Specialization

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 (102,122 respondents, 96.1%) and the second most widely used language, German (3,529 respondents, 3.3%).

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 83.9% and 85.5%, respectively. In these two fields the proportion of usage of German and French was relatively high. The percentages for arts were German 10.3% and French 7.4%, and those for law were German 19.0% 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 (103,561 respondents, 96.6%) and the second most widely used language, German (4,341 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 85.7% and 86.7%, respectively. In these two fields the proportion of usage of German and French was relatively high. The percentages for arts were German 11.7% and French 8.0%, and those for law were German 24.0% and French 9.6% (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	29,179	19,803	16,622	1,465	328	209	2,043	1,199	1,155	9,376
Law	3,890	2,777	2,375	234	29	36	527	100	122	1,113
Economics	6,968	5,143	4,980	119	40	37	242	126	164	1,825
Science	14,400	12,654	12,643	108	18	30	80	35	45	1,746
Engineering	21,605	18,676	18,636	71	35	22	92	166	165	2,929
Agriculture	7,178	5,780	5,755	25	15	5	38	52	86	1,398
Medicine	32,393	25,570	25,549	68	34	8	205	101	87	6,823
Interdisciplinary Area	18,401	13,725	13,601	91	34	14	169	92	112	4,676
Wide Area	2,417	1,212	1,103	42	8	10	97	24	55	1,205
Unknown	3,442	899	858	33	14	4	36	22	46	2,543
Total	139,873	106,239	102,122	2,256	555	375	3,529	1,917	2,037	33,634

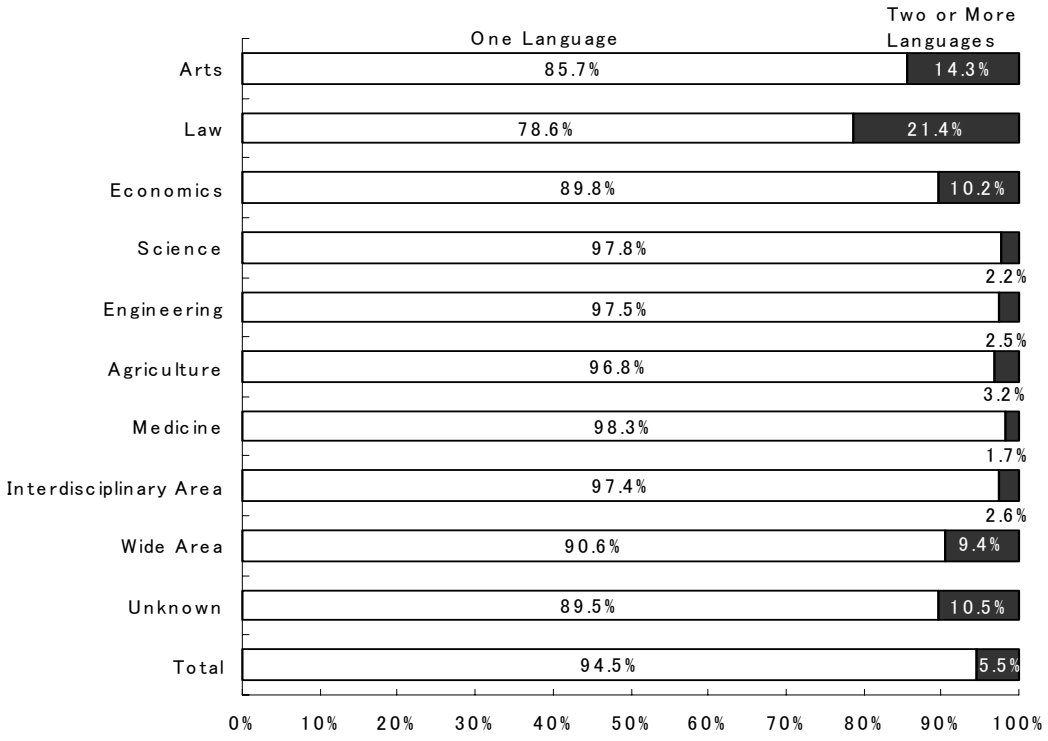

Figure 32　Proportion of Researchers by Field of Specialization / by Number of Languages Other Than Japanese Used to Present Research Findings, Etc.

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	29,179	19,790	16,952	1,587	321	230	2,321	1,205	974	9,389
Law	3,890	2,826	2,449	270	27	37	679	96	116	1,064
Economics	6,968	5,270	5,135	171	33	51	371	120	159	1,698
Science	14,400	13,019	13,015	145	16	28	125	29	34	1,381
Engineering	21,605	18,980	18,946	96	31	27	213	136	127	2,625
Agriculture	7,178	5,918	5,903	19	12	6	69	44	50	1,260
Medicine	32,393	25,514	25,498	72	28	9	230	85	58	6,879
Interdisciplinary Area	18,401	13,848	13,755	102	24	13	225	92	87	4,553
Wide Area	2,417	1,150	1,070	37	9	11	73	24	39	1,267
Unknown	3,442	871	838	32	11	3	35	19	36	2,571
Total	139,873	107,186	103,561	2,531	512	415	4,341	1,850	1,680	32,687

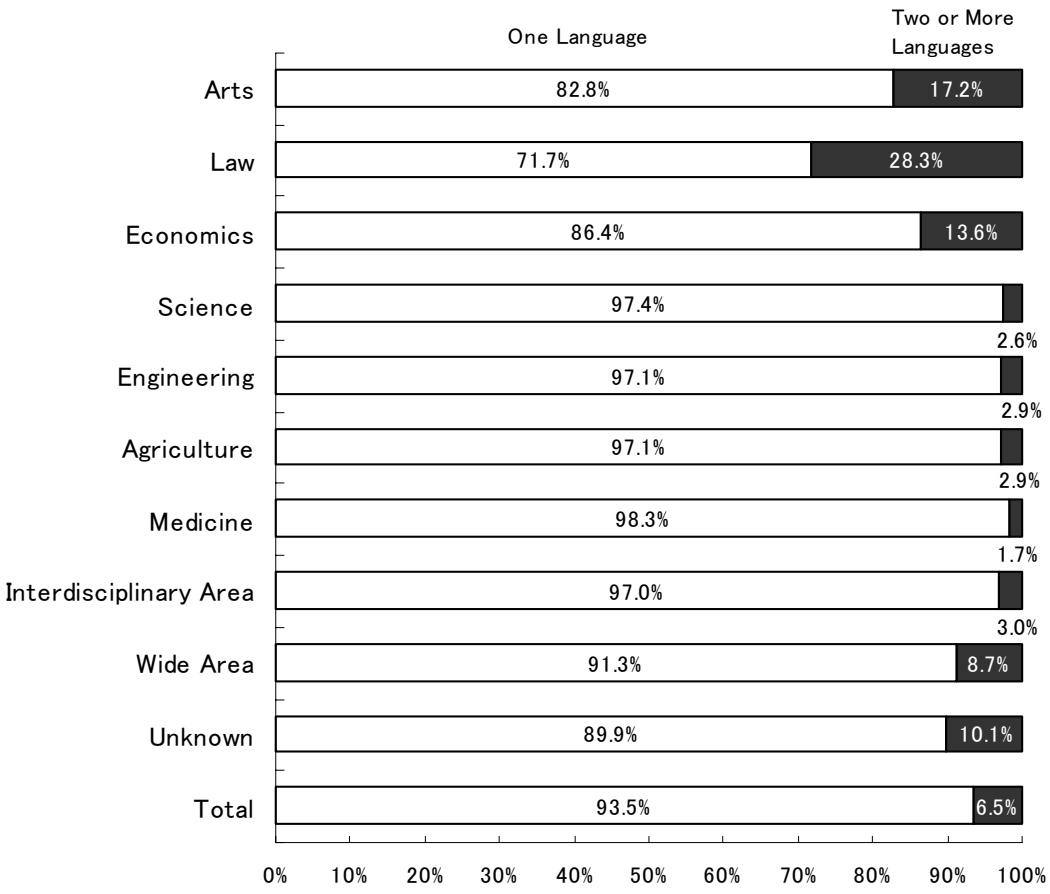

Figure 33　Proportion of Researchers by Field of Specialization/by Number of Languages Other Than Japanese Used to Write Papers

7. Academic Society Affiliations of Researchers

7.1 Japanese Academic Societies

Membership in Japanese academic societies was reported by 125,748, or 89.9%, 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 3.1.

Broken down by institution governing authority, the figures were national institutions 89.1%, municipal institutions 91.4 and private institutions 90.5%.

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 3.3 (Table 12).

Broken down by field of specialization, researchers not belonging to any academic societies were most numerous in wide area (21.6%), followed in descending order by science (9.7%), law (9.6%), medicine (9.4%), arts (8.7%), agriculture (8.3%), and interdisciplinary area (8.0%) (Figure 35).

The average number of academic society memberships was highest was medicine, where the number of memberships per individual averages 4.3. In the field of science the average number of memberships was low because 32.6% 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 (3.5), followed in descending order by universities (3.2), junior colleges (2.9), private scientific research institutes (2.6), inter-university research institutes (2.5), and colleges of technology (2.5) (Figure 36). Note that the average number of memberships was high among researchers affiliated with national and 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	3.5	3.6
Law	2.9	3.1	3.3	3.1
Economics	3.1	3.2	3.5	3.4
Science	2.4	2.7	2.6	2.4
Engineering	3.0	3.3	3.4	3.2
Agriculture	3.5	3.8	4.0	3.6
Medicine	4.1	4.3	4.4	4.3
Interdisciplinary Area	3.4	3.9	3.4	3.4
Wide Area	3.1	3.1	2.9	3.0
Unknown	2.8	3.3	2.6	2.7
Total	3.3	3.8	3.6	3.5

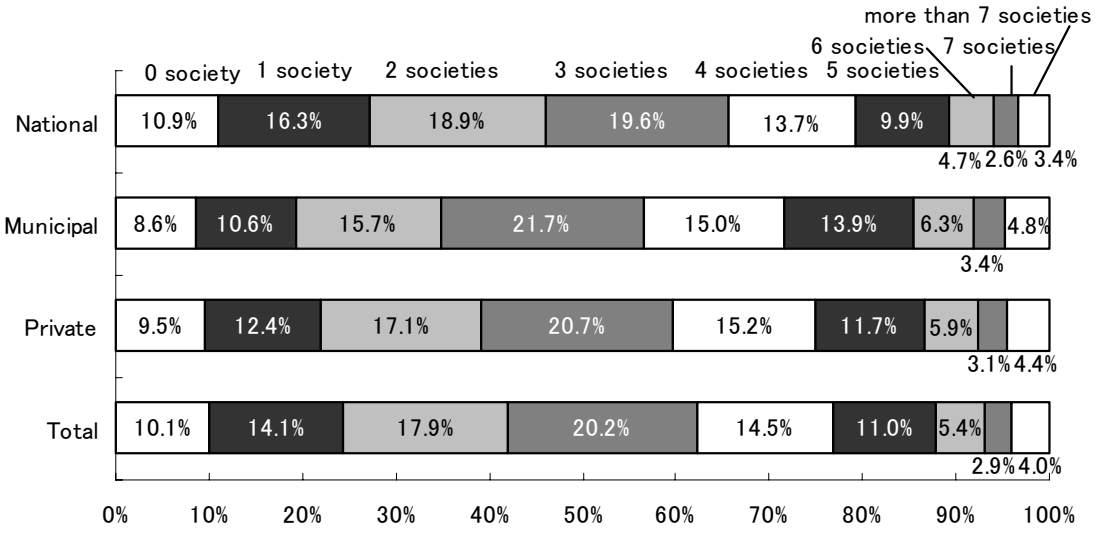

Figure 34　Ratio of Average Number of Academic Society Affiliations (Japanese) by Institution Governing Authority

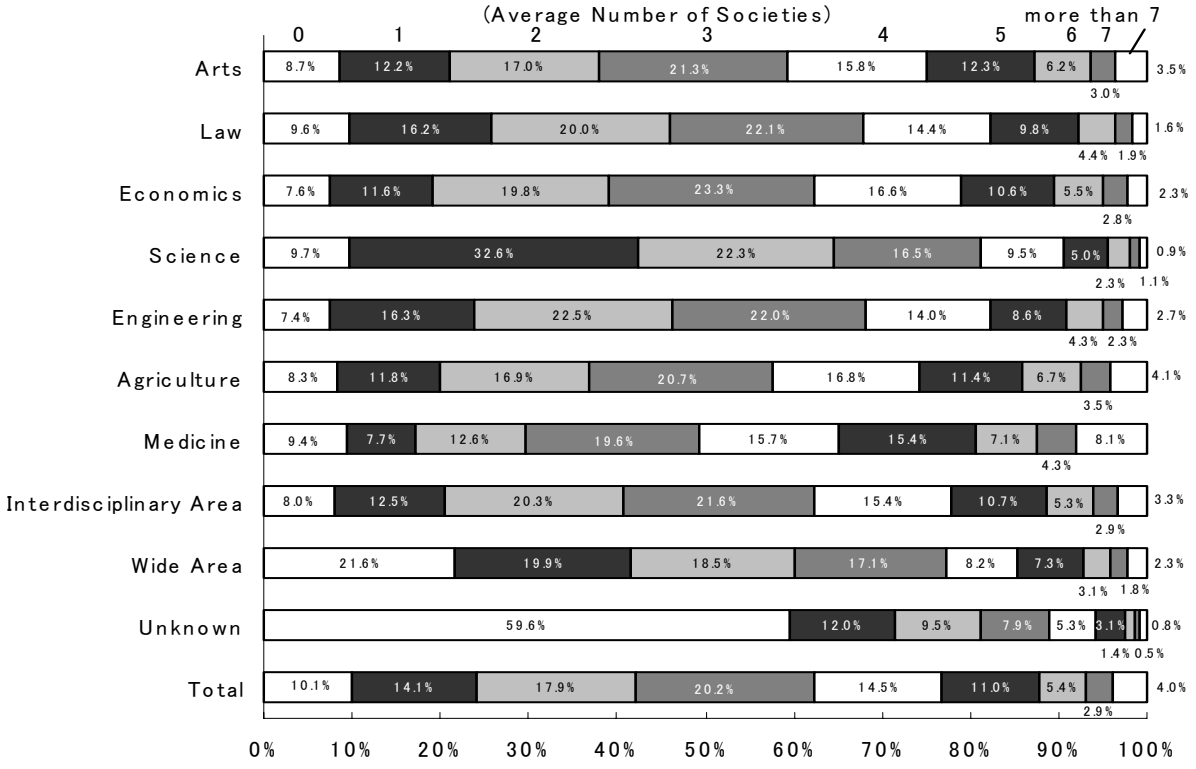

Figure 35　Ratio of Average Number of Academic Society Affiliations (Japanese) by Field of Specialization

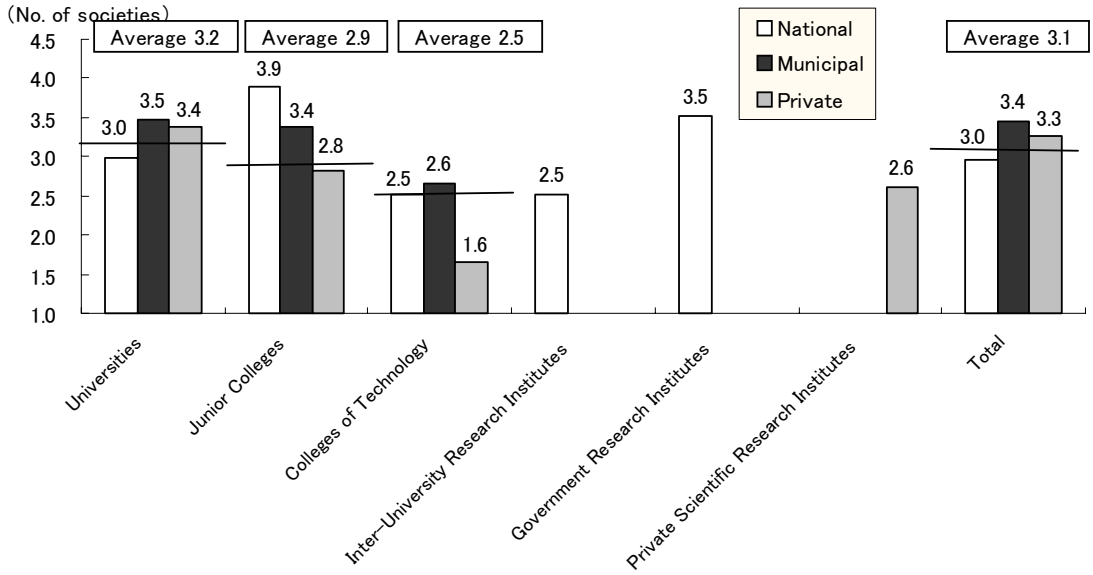

Figure 36　Average Number of Academic Society Affiliations (Japanese) by Institution Type/ by Institution Governing Authority

7.2 Overseas Academic Societies

Membership in one or more overseas academic societies was reported by 32,167, or 23.5%, 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 125,748 researchers (89.9%) 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 25.7% or 16,852 persons. The next is municipal institutions at 22.5% and private institutions at 20.4%. 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 (28.5%), science (27.3%), agriculture (25.9%), and medicine (25.9%). It was somewhat lower in fields in the humanities and social sciences such as economics (19.9%), arts (17.0%), and law (16.0%) (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 1.67, followed by universities in second place at 1.48 (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	1.5	1.5	1.5
Law	1.4	1.6	1.4	1.4
Economics	1.4	1.3	1.4	1.4
Science	1.4	1.4	1.4	1.4
Engineering	1.4	1.4	1.4	1.4
Agriculture	1.5	1.4	1.4	1.5
Medicine	1.6	1.6	1.6	1.6
Interdisciplinary Area	1.5	1.4	1.5	1.5
Wide Area	1.6	1.6	1.6	1.6
Unknown	1.4	1.8	1.5	1.5
Total	1.5	1.5	1.5	1.5

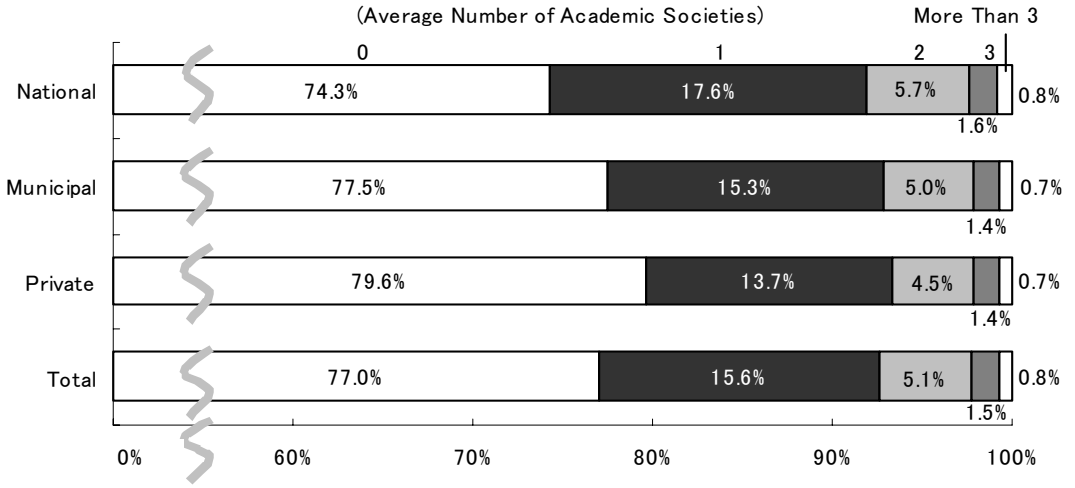

Figure 37　Ratio of Average Number of Academic Society Affiliations (Overseas) by Institution Governing Authority

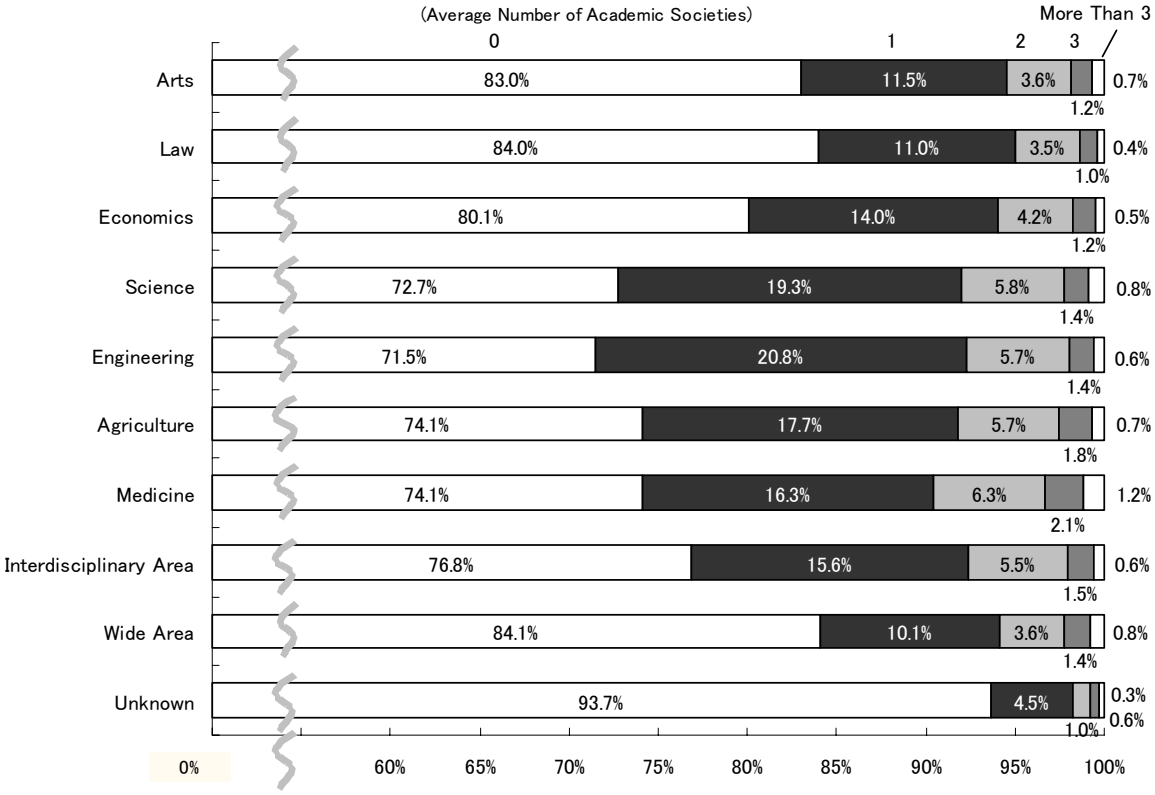

Figure 38　Ratio of Average Number of Academic Society Affiliations (Overseas) by Field of Specialization

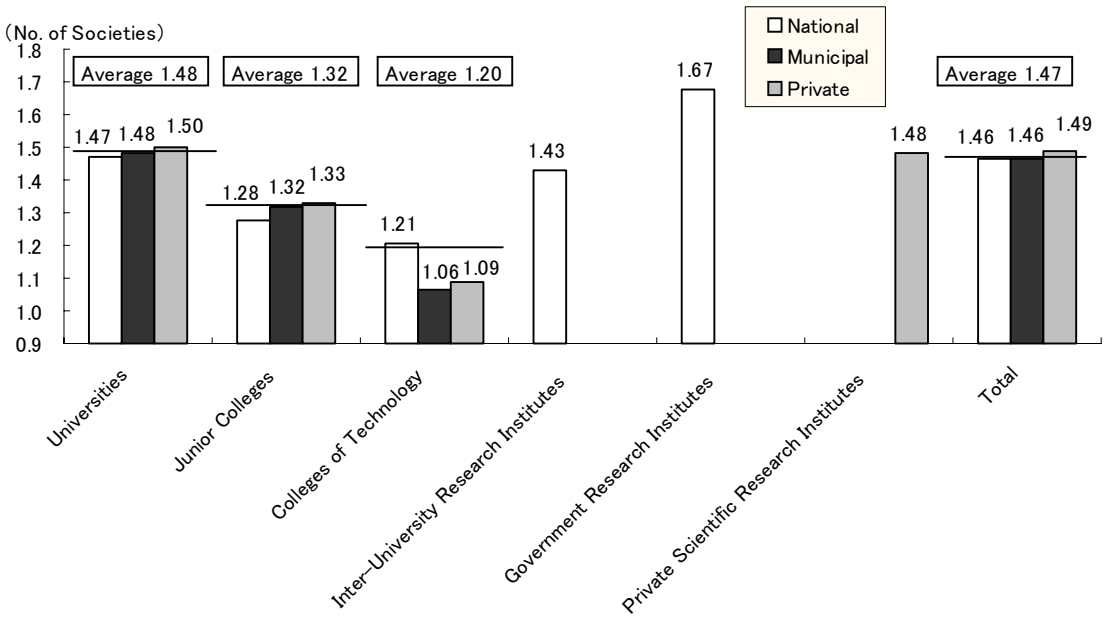

Figure 39　Average Number of Academic Society Affiliations (Overseas) Among Respondents Affiliated with Overseas Academic Society, by Institution Type / by Institution Governing Authority

8. Academic Awards Received

8.1 Japanese Awards Received

Of the total number of researchers, 16.8% have received some sort of Japanese academic award. The breakdown by institution governing authority is national institutions 20.0%, municipal institutions 16.5%, and private institutions 13.5%.
Broken down by field of specialization, the percentage of Japanese award holders was highest in engineering (32.0%), followed in descending order by agriculture (23.9%) and wide area (20.7%) (Figure 40).

The type of institution with the largest percentage of Japanese award holders was inter-university research institutes at 24.3%. This was followed in descending order by universities (17.6%), private scientific research institutes (15.8%), government research institutes of the Ministry of Education, Science, Sports, and Culture (15.0%), colleges of technology (12.2%), and junior colleges (9.7%) (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 0.34, municipal institutions 0.29, and private institutions 0.24. The breakdown by field of specialization puts engineering (0.65) in first place, followed by wide area (0.55) and agriculture (0.34) (Figure 42).

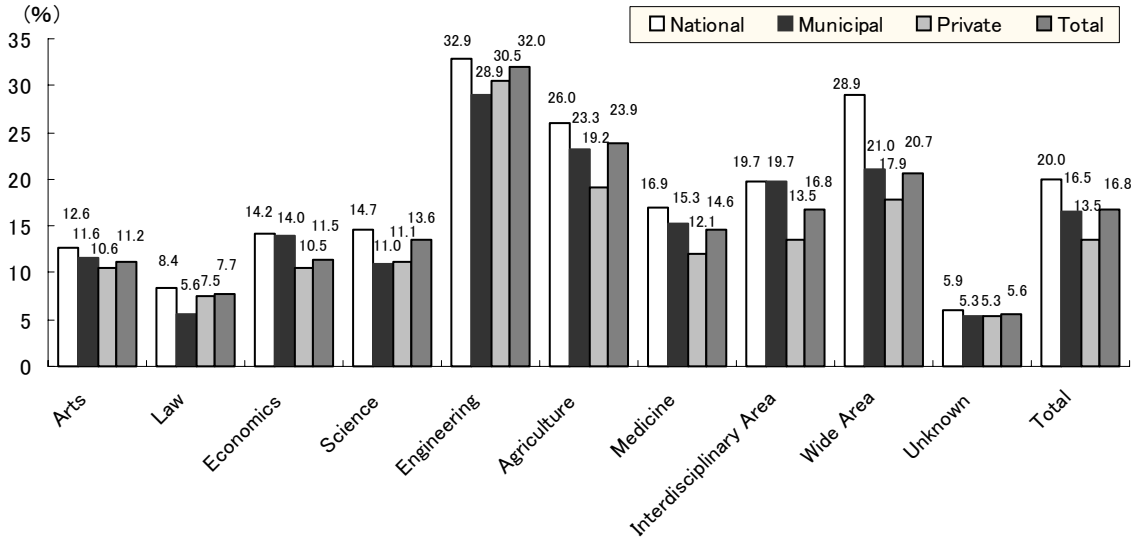

Figure 40　Ratio of Persons Who Have Received Awards (Japanese) by Field of Specialization

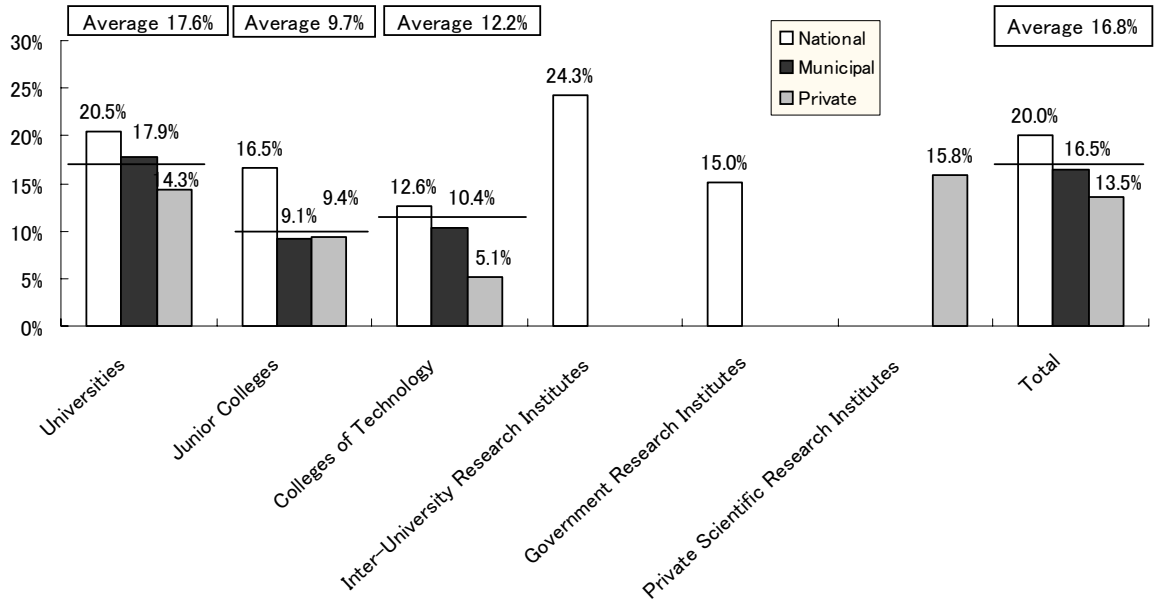

Figure 41　Ratio of Persons Who Have Received Awards (Japanese) by Institution Type

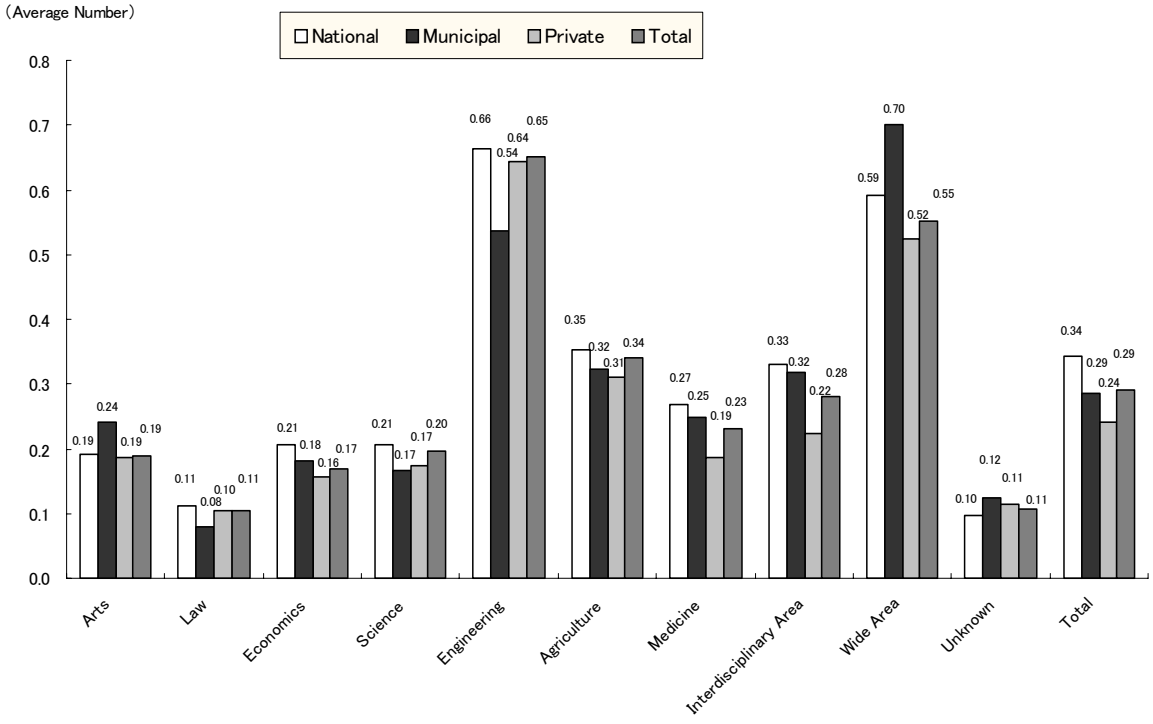

Figure 42　Average Number of Awards Received (Japanese) by Field of Specialization

8.2 Overseas Awards Received

Of the total number of researchers, 3.0% have received some sort of overseas academic award. The breakdown by institution governing authority is national institutions 3.5%, municipal institutions 2.8%, and private institutions 2.5%.

Broken down by field of specialization, the percentage of overseas award holders was highest in wide area (5.5%), followed in descending order by engineering (5.5%) and medicine (3.4%) (Figure 43).

The type of institution with the largest percentage of overseas award holders was inter-university research institutes at 4.2%. This was followed in descending order by universities (3.2%), private scientific research institutes (2.5%), government research institutes of the Ministry of Education, Science, Sports, and Culture (1.6%), junior colleges (1.3%), and colleges of technology (1.0%) (Figure 44).

The average number of overseas academic awards received by respondents overall was 0.045. The breakdown by institution governing authority is national institutions 0.050, municipal institutions 0.047, and private institutions 0.039. The breakdown by field of specialization puts wide area (0.094) in first place, followed by engineering (0.079), medicine (0.048), and interdisciplinary area (0.038 (Figure 45).

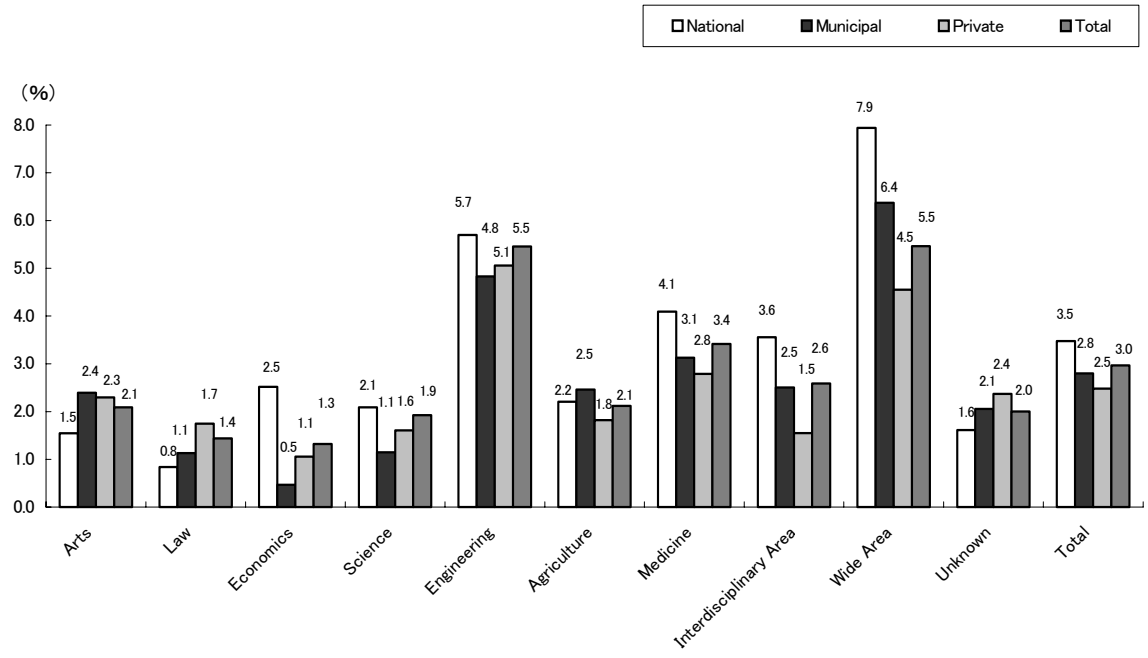

Figure 43　Ratio of Persons Who Have Received Awards (Overseas) by Field of Specialization

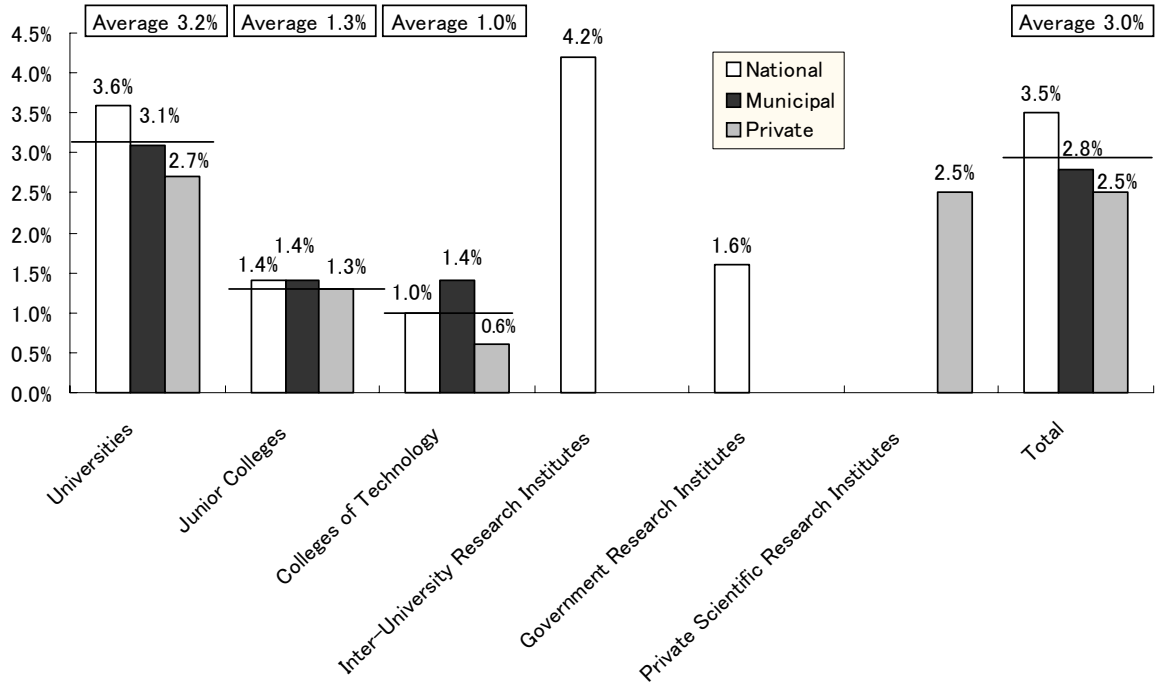

Figure 44　Ratio of Persons Who Have Received Awards (Overseas) by Institution Type

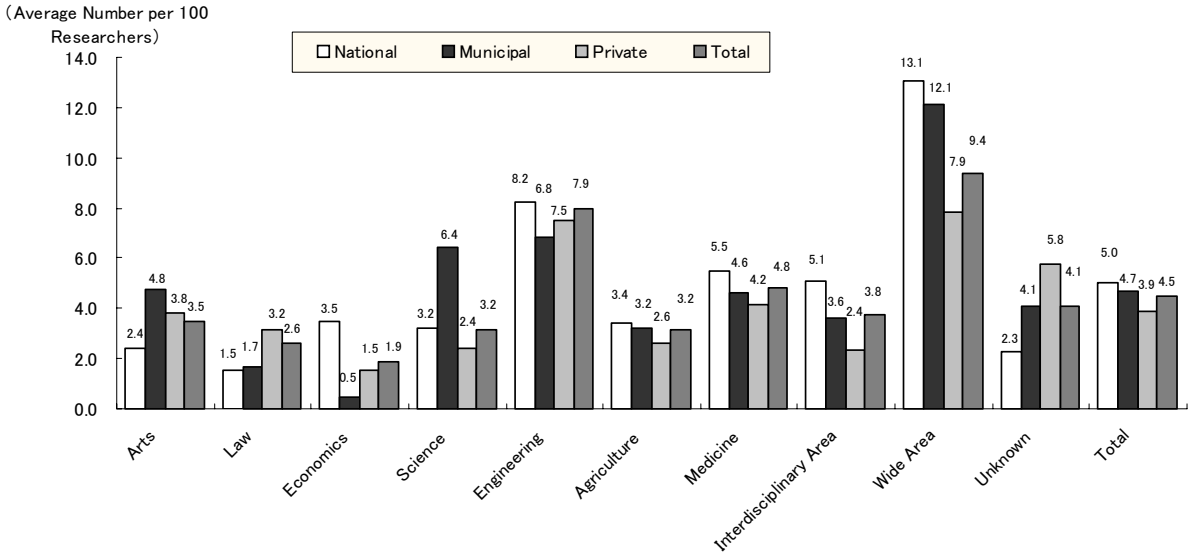

Figure 45　Average Number of Awards Received (Overseas) by Field of Specialization