

9. Research

9-1. Trends across Kyushu University as a Whole Based on Field Classification of Journals

At Kyushu University, there is a high percentage of publications carried in journals for the fields of **Medicine, Physics and Astronomy, Engineering, Biochemistry and Genetics, Molecular Biology, and Material Science**. At the same time, for Kyushu University the percentage of publications in the top 10%, the percentage of publications carried in the top 10% of journals, internationally co-authored publications, and publications resulting from academic-corporate collaboration were all **higher than the average for Japan as a whole**.

Kyushu University

九州大学

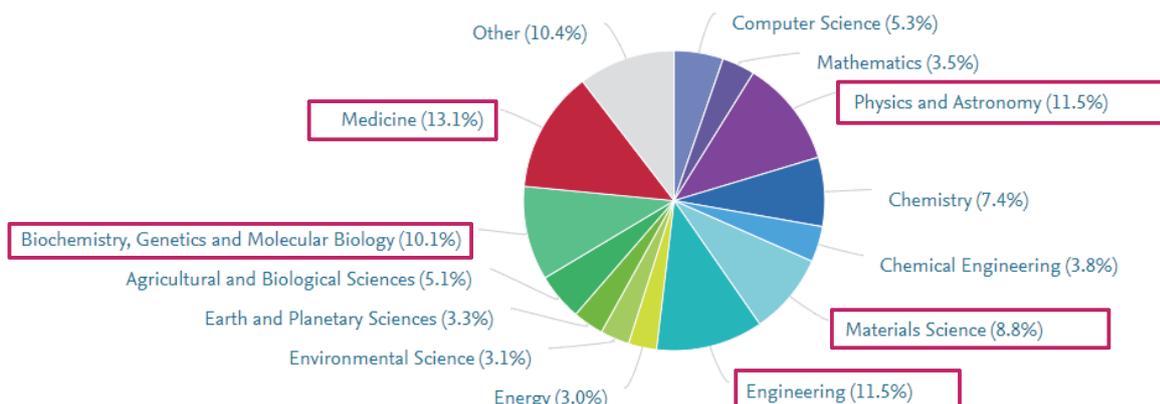
132nd (QS) · 401-500 (THE) · 201-300 (ARWU) | Japan | [More details on this Institution](#)

2014 to 2018 | no subject area filter selected | ASJC

The pie graph shows percentages of publications released by researchers affiliated with Kyushu University between 2014 and 2018 by subject area in Scopus.

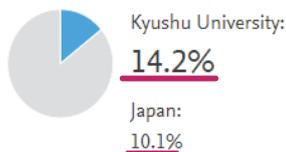
Overall research performance

Number of publications	Number of authors	FWCI*
24,657 ▲	14,052 ▼	1.13
View list of publications		
Number of Citations	Citations per Publication	h5-index
197,864	8.0	102



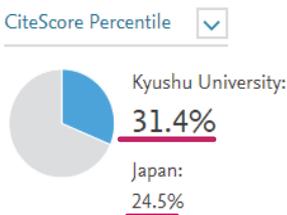
Outputs in Top Citation Percentiles

Publications in top 10% most cited worldwide



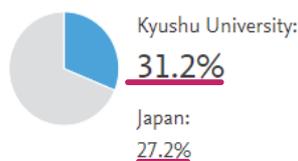
Publications in Top Journal Percentiles

Publications in top 10% journals by CiteScore Percentile



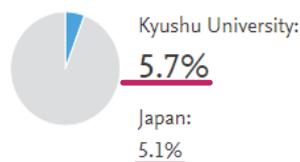
International Collaboration

Publications co-authored with Institutions in other countries



Academic-Corporate Collaboration

Publications with both academic and corporate affiliations



* FWCI(Field-weighted Citation Impact) is the number of citations received by the publication, divided by the world average for the same type of publications in the same field and same publication year. An FWCI of 1 or higher means that the average impact is higher than the world average.

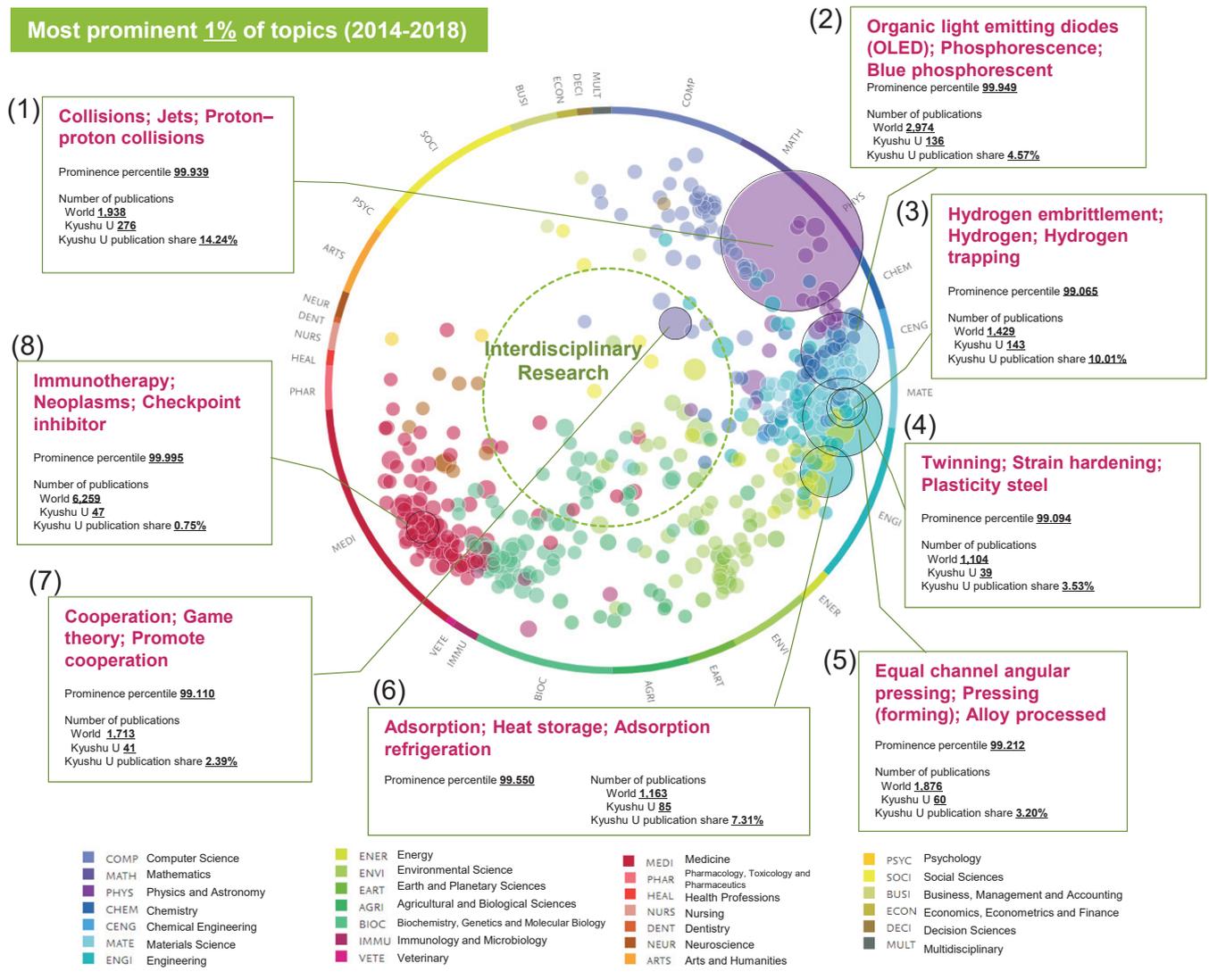
*Source: Elsevier's "SciVal" (as of September 2019)

9-1. Trends across Kyushu University as a Whole Based on Field Classification of Journals (Continued)

■ Topic Prominence: Analysis of University Strengths Based on Co-citation of Publications

According to the Topic Prominence function of SciVal, of the papers published by Kyushu University between 2014 and 2018, the research field is a topic that is attracting attention in 9,217 cases. The figure below shows the research field topics that correspond to the most prominent 1%. The topics are concentrated in the fields of Physics and Astronomy, Chemicals, Chemical Engineering, Material science, Engineering, Energy and Medicine. Among these, there are many publications on topics such as (1) Collisions; Jets; Proton-proton collisions, (2) Organic light emitting diodes (OLED); Phosphorescence; Blue phosphorescent, (3) Hydrogen embrittlement; Hydrogen trapping, (4) Twinning; Strain hardening; Plasticity steel, (5) Equal channel angular pressing; Pressing (forming); Alloy processed, (6) Heat storage; Adsorption refrigeration, (7) Cooperation; Game theory; Promote cooperation and (8) Immunotherapy; Neoplasms; Checkpoint inhibitor. Because the global publication share of such fields also tends to be high, these research fields tend to be lively within Kyushu University as well.

Most prominent 1% of topics (2014-2018)



• **Overview of the Topic Prominence function:** This function uses citation links to documents in Scopus and clusters them into around 97,000 topics, ranked by Prominence. The new Prominence indicator shows the most recent citation count for documents, the display count and the level of interest. Prominence is correlated with grants, and helps researchers and research managers identify topics that are highly likely to see an increase in funding. The closer a topic as to the center of the circle, the more interdisciplinary it is. (Excerpted from Elsevier Quick Reference Guide, January 2018)

◆ Perspectives ◆

- Each circle represents a topic.
- Circumference indicates research fields used in Scopus (ASJC 27 major subject areas) by color.
- Color of circle: For the fields of the publications that make up the topics, the fields that make the highest proportion of the total are displayed in the color of the fields located around the circumference.
- Size of circle indicates the output of the entity in the topic.
- Position of the circle is based upon the ASJC categories of the journals in which the scholarly output is published. Topics closer to the center of the wheel are more likely to be multidisciplinary.

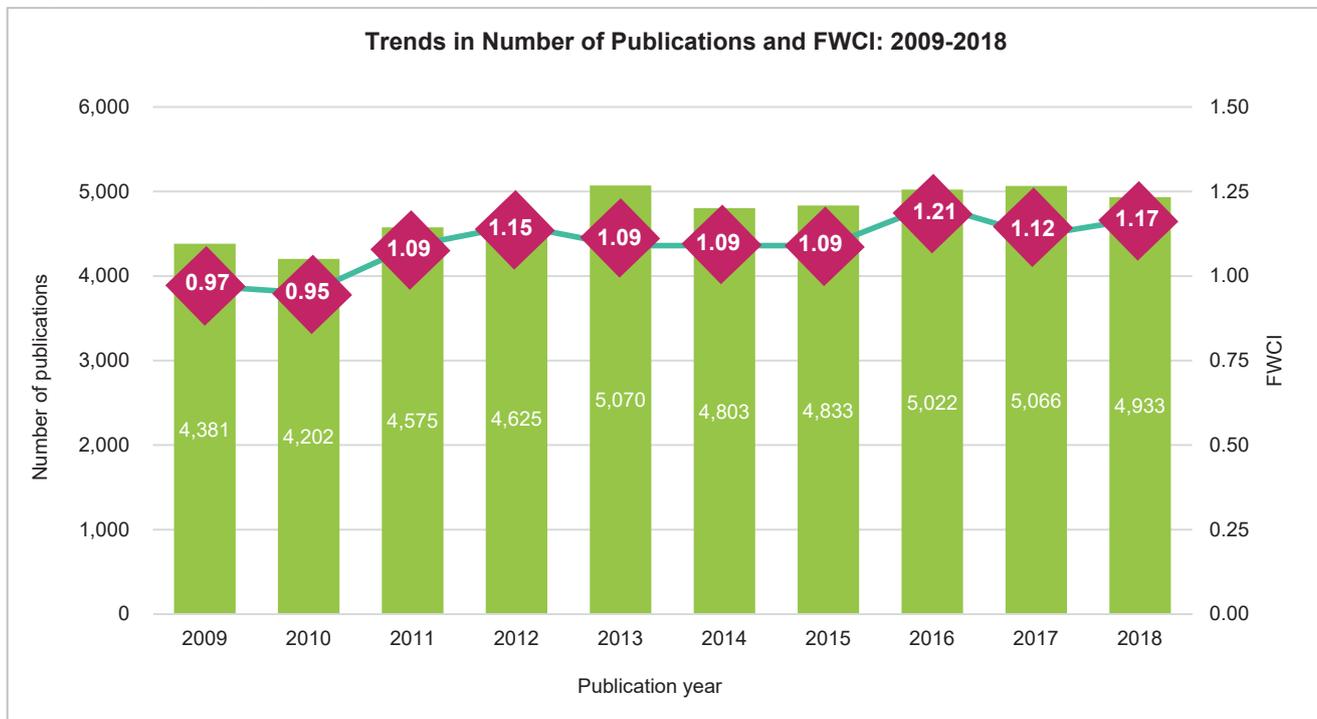
*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality

■ Trends in Number of Publications and FWCI

The number of publications at Kyushu University was on the rise until 2013, after which the level has remained steady at around 5,000 publications. In 2011, FWCI exceeded the global average of 1.0. Since then it has been more or less stable, maintaining a level of around 1.1 and in 2016, it reached a high level of 1.21.

◆Kyushu University◆



◆Comparisons with Other Universities◆

Scholarly Output

Rank	University	Number
1	The University of Tokyo	59,892
2	Kyoto University	40,977
3	Osaka University	32,921
4	Tohoku University	31,598
5	Kyushu University	24,657
6	Nagoya University	24,151
7	Hokkaido University	21,495
8	Tokyo Institute of Technology	19,321
9	University of Tsukuba	16,577
10	Keio University	15,977

(2014-2018)

Citation Count

Rank	University	Citation Count	Average Citations per Publication
1	The University of Tokyo	595,677	9.9
2	Kyoto University	409,373	10.0
3	Osaka University	272,555	8.3
4	Tohoku University	261,902	8.3
5	Nagoya University	213,953	8.9
6	Kyushu University	197,864	8.0
7	Hokkaido University	166,005	7.7
8	Tokyo Institute of Technology	155,056	8.0
9	University of Tsukuba	133,564	8.1
10	Keio University	117,942	7.4

(2014-2018)

FWCI

Rank	University	FWCI
1	Kyoto University	1.36
2	The University of Tokyo	1.35
3	Nagoya University	1.21
4	University of Tsukuba	1.17
5	Tokyo Institute of Technology	1.16
6	Waseda University	1.14
7	Kyushu University	1.13
8	Tohoku University	1.12
8	Osaka University	1.12
9	Keio University	1.10
10	Hokkaido University	1.02

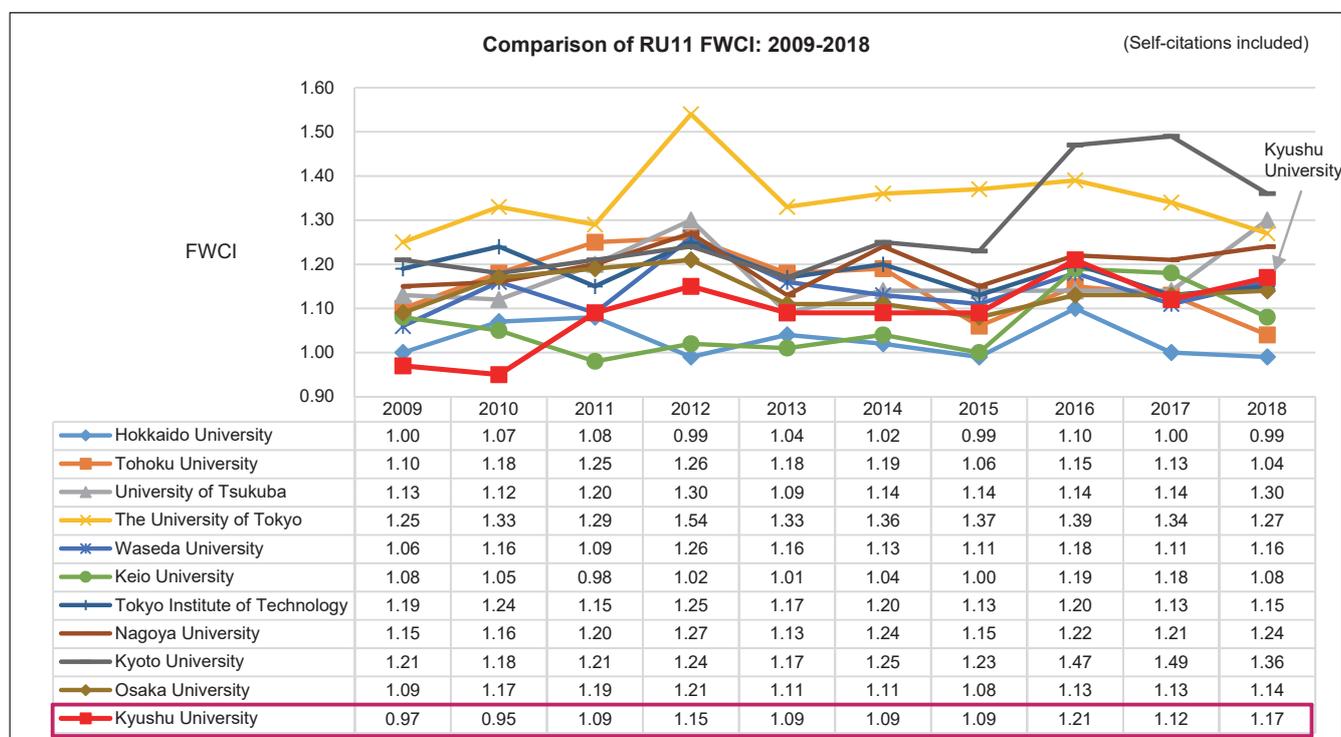
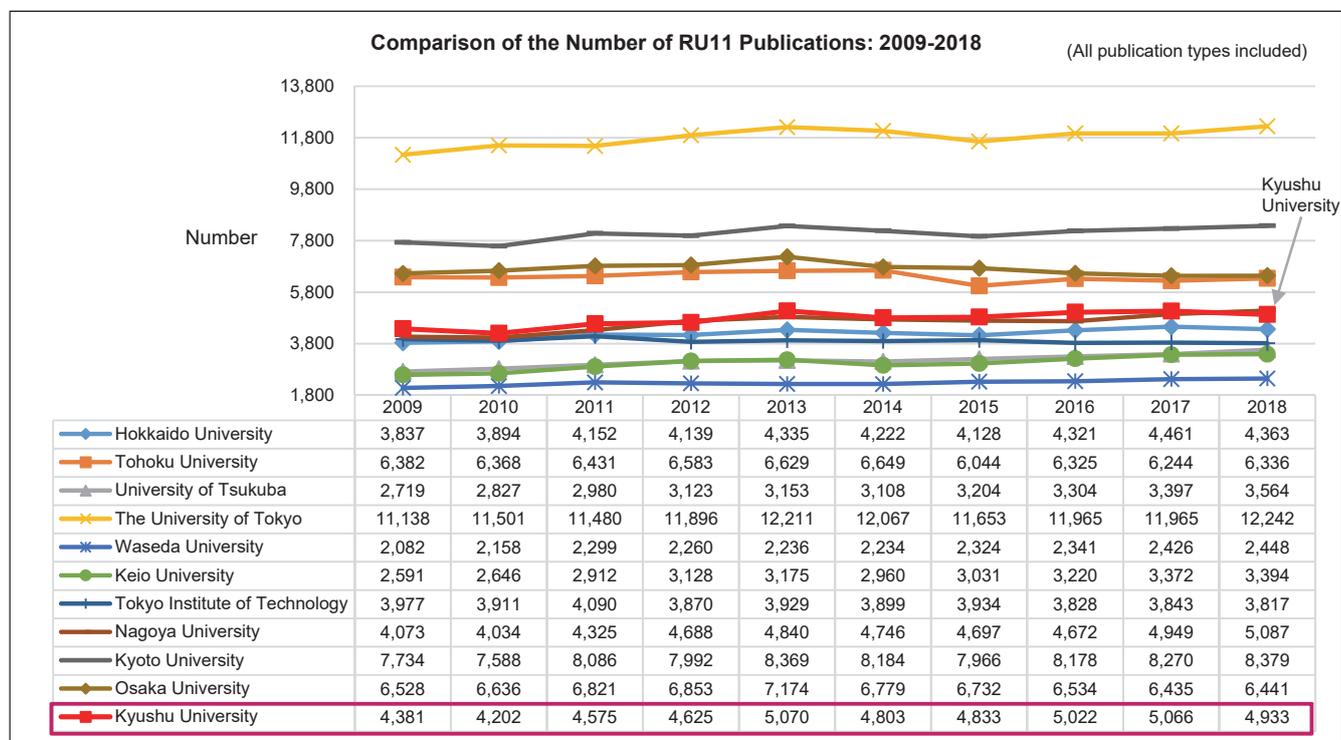
(2014-2018)

*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality (Continued)

For each RU11* university, we compared the trend in the number of publications over the most recent 10 years. Although the number of publications at Kyushu University has increased over the 10 years from roughly 4,200 per year to roughly 5,000 per year, the university's rank within RU11 has stagnated around fifth place. With regard to FWCI, Kyushu University has exceeded the global average of 1.0 since 2011.

◆ Comparison of the RU11 ◆



* RU11 (Research University 11) is a consortium that aims to develop academia via eleven universities: Hokkaido University, Tohoku University, University of Tsukuba, The University of Tokyo, Waseda University, Keio University, Tokyo Institute of Technology, Nagoya University, Kyoto University, Osaka University, and Kyushu University. RU11 is composed of both national and private universities.

*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality (Continued)

Trends in the Number and Percentage of Publications Carried in the World's Top Journals

Over the long term, the number of publications carried in the top 1% and 25% of journals is on a rising trend. Publications in the top 25% of journals have exceeded 50% since 2014, and more than 50% of the University's publications are carried in influential periodicals.

◆Kyushu University◆



•What do we mean by the number and percentage of publications carried in journals in top percentiles?

The number and percentage of publications carried in journals in top percentiles, based on citation counts. It indicates the number of publications in the top 1%, 5%, 10%, and 25% of journals based on the number and percentage of citations in Scopus each year.

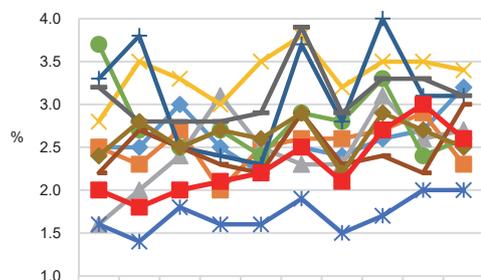
*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality (Continued)

For each RU11 university, we compared the trends in the percentage of top journal publications. For Kyushu University, the percentage of journal publications in the top 10% in particular has increased significantly in comparison to that of other universities. The percentage of journal publications in the top 5% peaked in 2016 and was on the decline throughout 2017.

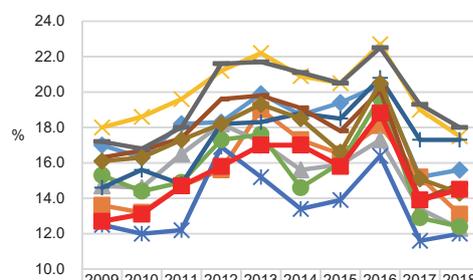
◆ Comparison of the RU11 ◆

Percentage of Publications in Top 1% of Journals



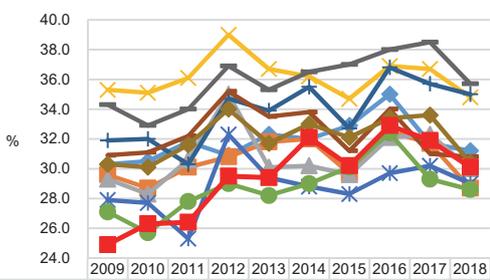
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hokkaido University	2.5	2.5	3.0	2.5	2.2	2.5	2.4	2.6	2.7	3.2
Tohoku University	2.5	2.3	2.7	2.0	2.5	2.6	2.6	2.7	2.9	2.3
University of Tsukuba	1.6	2.0	2.4	3.1	2.5	2.3	2.3	3.1	2.6	2.7
The University of Tokyo	2.8	3.5	3.3	3.0	3.5	3.8	3.2	3.5	3.5	3.4
Waseda University	1.6	1.4	1.8	1.6	1.6	1.9	1.5	1.7	2.0	2.0
Keio University	3.7	2.7	2.5	2.7	2.4	2.9	2.8	3.3	2.4	2.6
Tokyo Institute of Technology	3.3	3.8	2.5	2.4	2.3	3.7	2.8	4.0	3.1	3.1
Nagoya University	2.2	2.7	2.5	2.3	2.2	2.9	2.3	2.4	2.2	3.0
Kyoto University	3.2	2.8	2.8	2.8	2.9	3.9	2.9	3.3	3.3	3.1
Osaka University	2.4	2.8	2.5	2.7	2.6	2.9	2.2	2.9	2.7	2.5
Kyushu University	2.0	1.8	2.0	2.1	2.2	2.5	2.1	2.7	3.0	2.6

Percentage of Publications in Top 5% of Journals



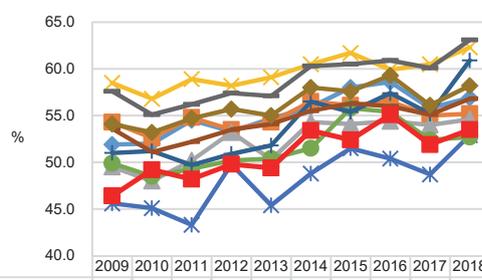
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hokkaido University	17.0	16.3	18.2	18.3	19.9	18.7	19.4	20.4	15.2	15.6
Tohoku University	13.6	13.2	14.7	15.6	19.0	17.3	16.5	18.1	15.2	13.1
University of Tsukuba	14.7	14.6	16.5	18.2	17.2	15.6	15.9	17.3	13.4	12.3
The University of Tokyo	18.0	18.6	19.6	21.2	22.2	20.9	20.5	22.7	19.0	17.5
Waseda University	12.5	12.0	12.2	16.9	15.2	13.4	13.9	16.4	11.6	12.0
Keio University	15.3	14.4	14.9	17.3	17.6	14.6	16.0	19.7	12.9	12.4
Tokyo Institute of Technology	14.6	15.6	14.8	18.2	18.3	18.8	18.5	20.8	17.3	17.3
Nagoya University	16.3	16.7	17.4	19.6	19.8	19.1	17.8	20.1	13.9	14.8
Kyoto University	17.2	16.8	18.0	21.6	21.7	21.1	20.5	22.5	19.3	18.0
Osaka University	16.1	16.3	17.3	18.2	19.3	18.5	16.6	20.5	15.1	14.3
Kyushu University	12.7	13.1	14.7	15.8	17.0	17.0	15.8	18.8	13.9	14.5

Percentage of Publications in Top 10% of Journals



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hokkaido University	30.3	30.5	31.8	30.9	32.3	32.0	32.9	35.0	31.7	31.2
Tohoku University	29.6	28.7	30.1	30.8	31.8	32.0	29.7	32.5	31.7	28.7
University of Tsukuba	29.3	28.3	30.6	35.0	30.1	30.2	29.6	32.1	32.3	30.0
The University of Tokyo	35.3	35.1	36.1	39.0	36.7	36.2	34.7	36.9	36.7	34.8
Waseda University	27.9	27.7	25.3	32.3	29.4	28.8	28.3	29.7	30.2	29.0
Keio University	27.1	25.7	27.8	29.0	28.2	29.0	30.1	32.4	29.3	28.6
Tokyo Institute of Technology	31.9	32.0	30.3	34.7	33.9	35.5	32.7	36.8	35.7	35.0
Nagoya University	30.9	31.1	32.2	35.2	33.5	33.8	31.2	34.0	31.0	30.8
Kyoto University	34.3	32.9	34.0	36.9	35.3	36.5	37.0	38.0	38.5	35.7
Osaka University	30.3	30.1	31.6	34.0	31.7	33.0	32.1	33.4	33.6	30.4
Kyushu University	24.9	26.3	26.4	29.5	29.4	32.1	30.2	32.9	31.9	30.1

Percentage of Publications in Top 25% of Journals



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hokkaido University	51.9	52.0	54.5	53.3	54.7	55.9	58.0	58.6	55.8	56.9
Tohoku University	54.3	52.6	54.8	53.5	54.3	56.5	56.1	56.5	55.0	55.2
University of Tsukuba	49.5	48.0	50.2	53.2	50.3	54.3	54.1	54.4	54.0	54.6
The University of Tokyo	58.5	56.8	58.9	58.2	59.1	60.5	61.7	59.9	60.5	62.3
Waseda University	45.6	45.1	43.3	49.8	45.4	48.8	51.5	50.4	48.7	52.9
Keio University	49.9	48.5	49.3	50.2	50.4	51.5	55.8	55.4	52.4	52.7
Tokyo Institute of Technology	51.0	51.2	49.7	50.9	51.8	56.5	55.4	57.4	55.2	60.9
Nagoya University	53.6	51.1	52.2	53.5	54.1	55.5	56.3	56.0	55.1	56.8
Kyoto University	57.6	55.1	56.2	57.4	57.1	60.3	60.5	60.9	60.1	63.1
Osaka University	54.1	53.2	54.7	55.7	55.0	58.0	57.6	59.3	56.1	58.2
Kyushu University	46.4	49.2	48.2	49.8	49.4	53.4	52.4	55.1	51.9	53.5

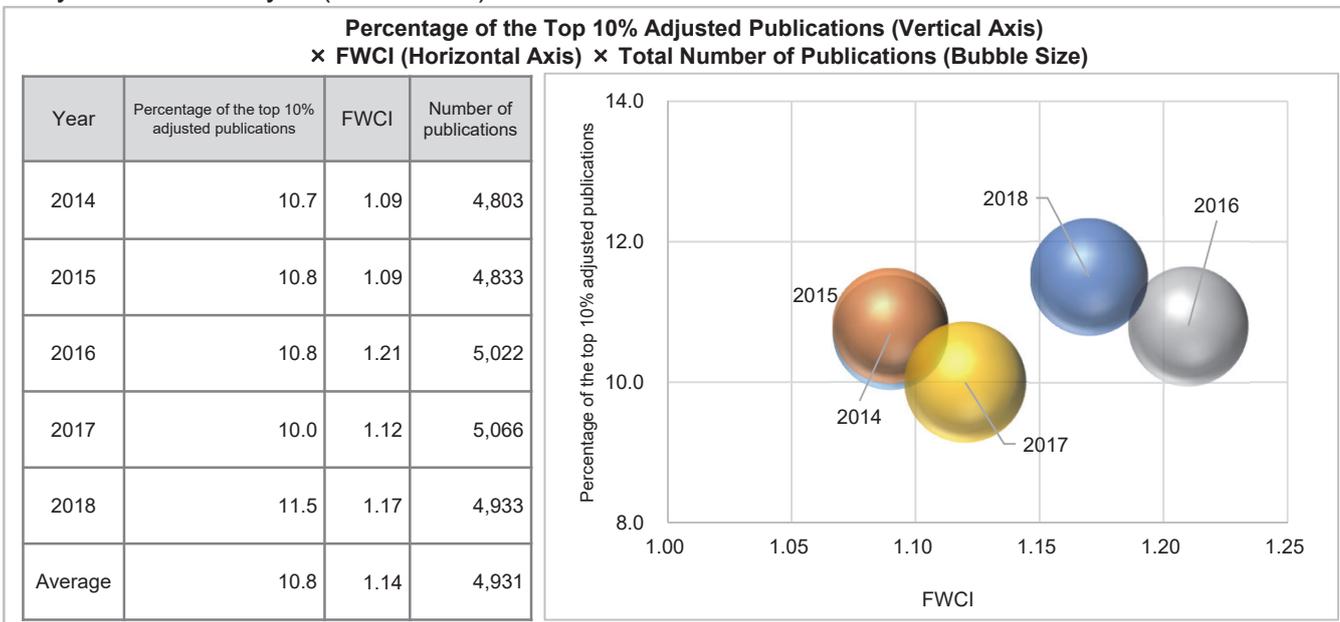
*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality (Continued)

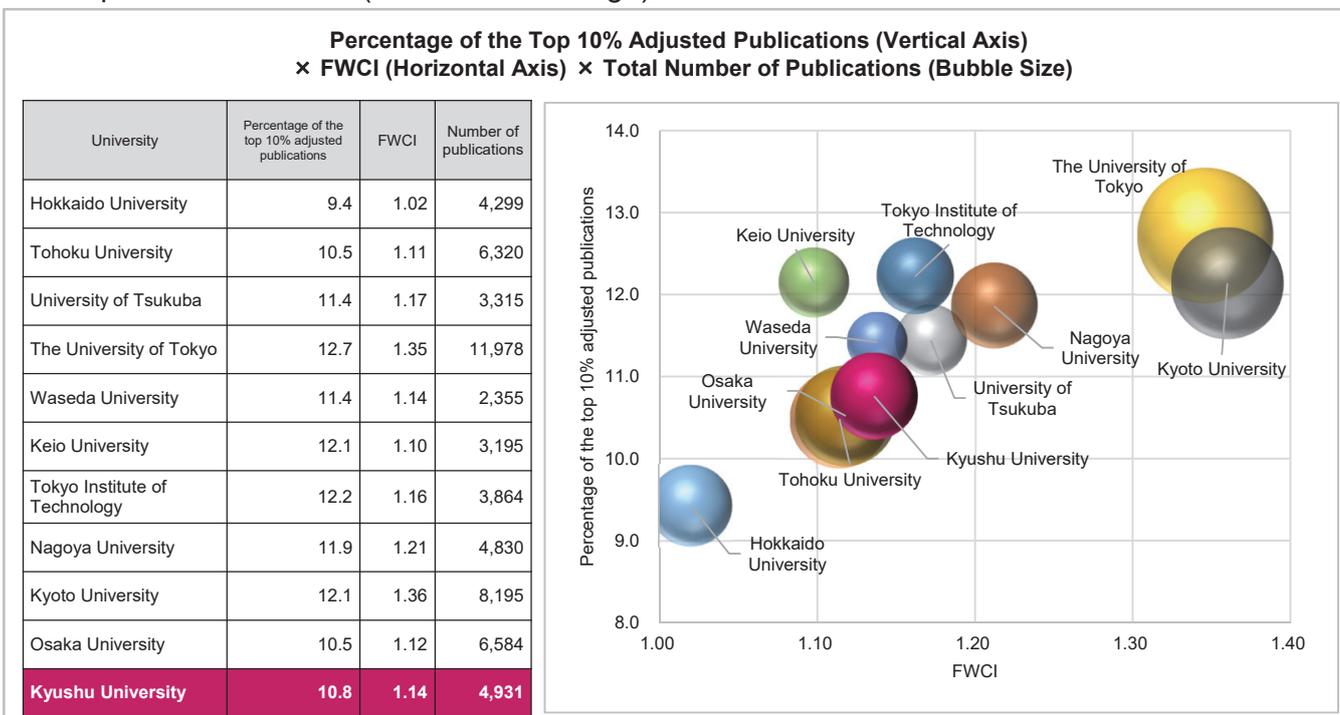
Overall Comparisons of Publication Quantity and Quality

In diagrams below, positioning further toward the top right indicates higher publication quality. The number of publications stays around 5,000 per year, while the top 10% adjusted publication percentage* is trending at around 10% or so. In addition, compared to the RU11, the top 10% of adjusted publications were ranked 8th and the FWCI value was ranked 7th. However, the number of publications was ranked 5th, showing that the University's distinctiveness, compared to the RU11, lies in the number of publications.

◆ Kyushu University ◆ (2014-2018)



◆ Comparison of RU11 ◆ (2014-2018 Average)



* Percentage of the top 10% adjusted publications means the percentage of field-adjusted publications among the world's top by number of citations. It shows the percentage of publications in the top 10%, based on the number of citations in Scopus each year.

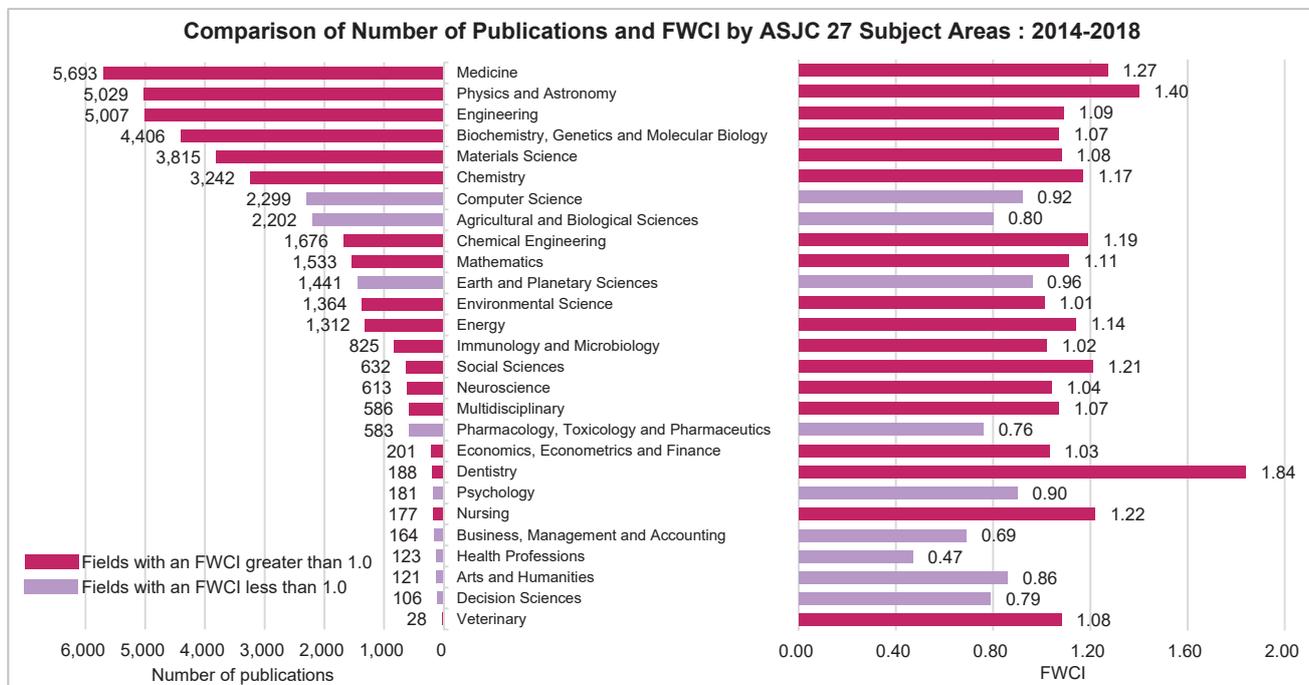
*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality (Continued)

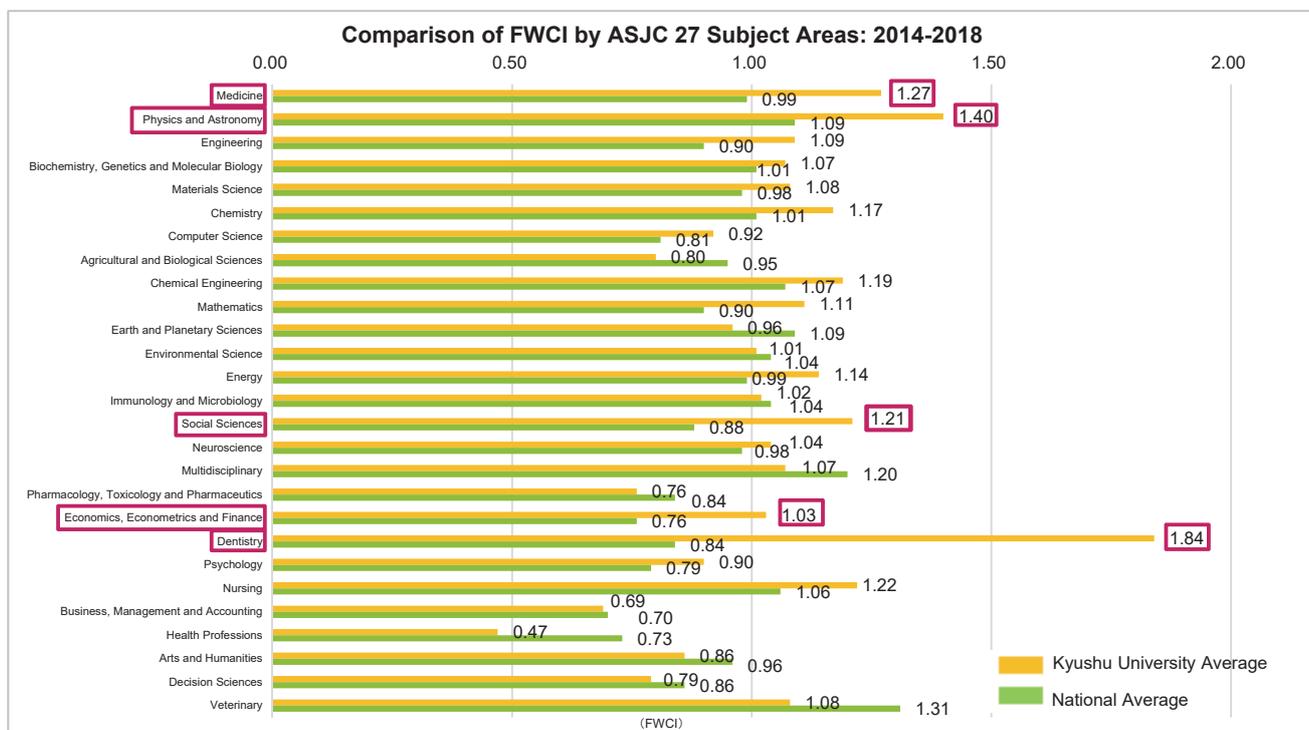
■ Comparison between Kyushu University and the National Average by ASJC* 27 Subject Areas: FWCI

Kyushu University has an FWCI greater than the global average of 1.0 in 17 of the 27 major subject areas. The five fields in which Kyushu University's FWCI score is particularly high compared with the national average are Dentistry, Social Sciences, Economics, Econometrics and Finance, Physics and Astronomy, and Medicine. A larger number of publications and higher FWCI indicates greater depth of research capability (i.e. that it is one of the university's strengths). A smaller number of publications and high FWCI often indicates that there is a specific faculty member with advanced research ability. In addition, when a specific faculty member belongs to a huge community of researchers, both the number of publications and FWCI are often higher.

◆ Kyushu University ◆



◆ Comparison between Kyushu University and the National Averages ◆



* ASJC: All Scopus Science Journal Classification.

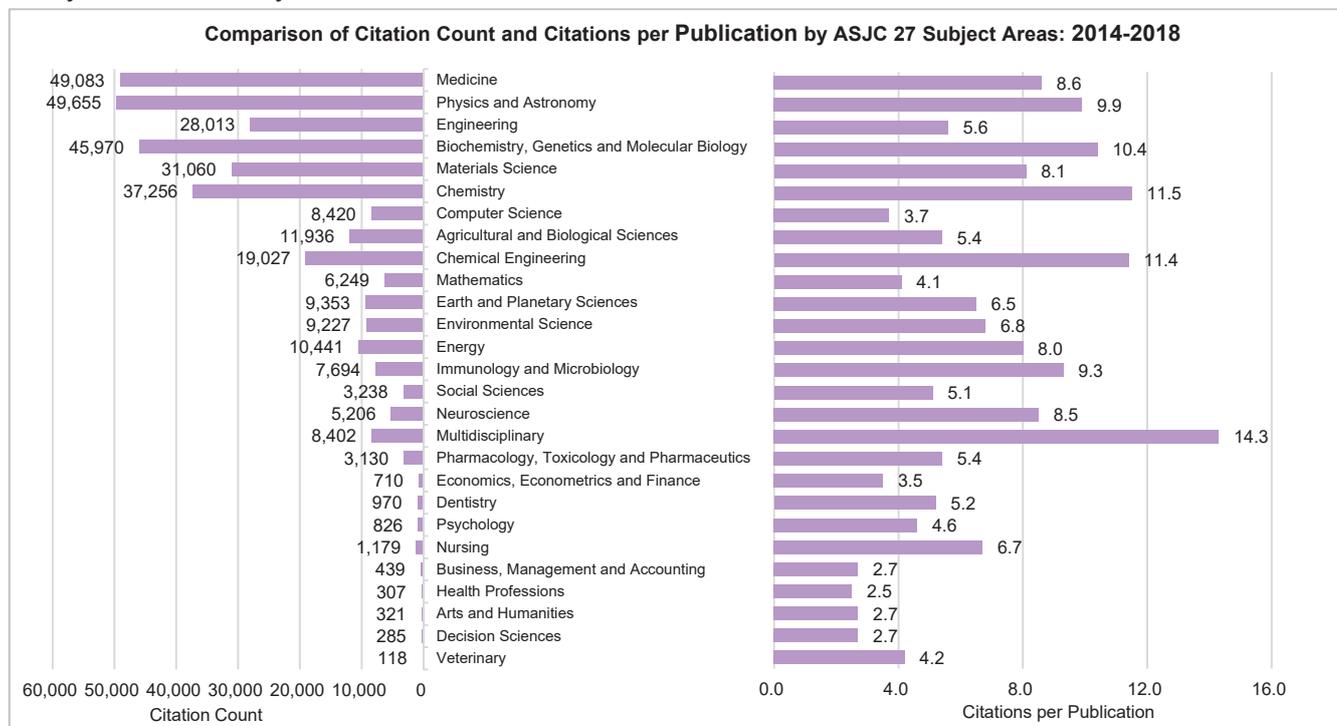
*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality (Continued)

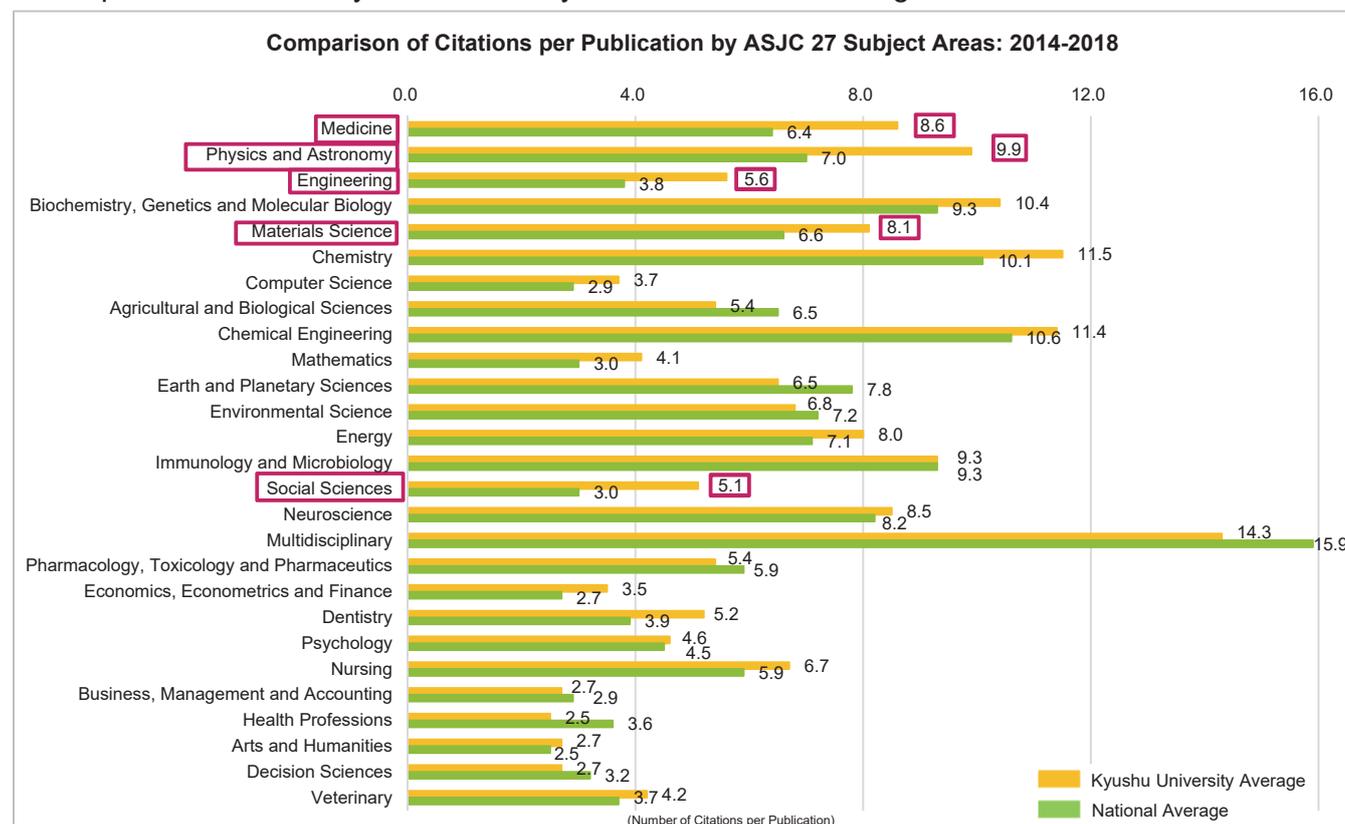
■ Comparison between Kyushu University and the National Average by ASJC 27 Subject Areas: Citations per Publication

Kyushu University's number of citations per publication is higher than the national average in 18 of the 27 categories. Within these, the top five fields for which the University's percentage of citations per publication is particularly high compared with the national average are Physics and Astronomy, Medicine, Social Sciences, Engineering, and Materials Science.

◆ Kyushu University ◆



◆ Comparison between Kyushu University and the National Averages ◆

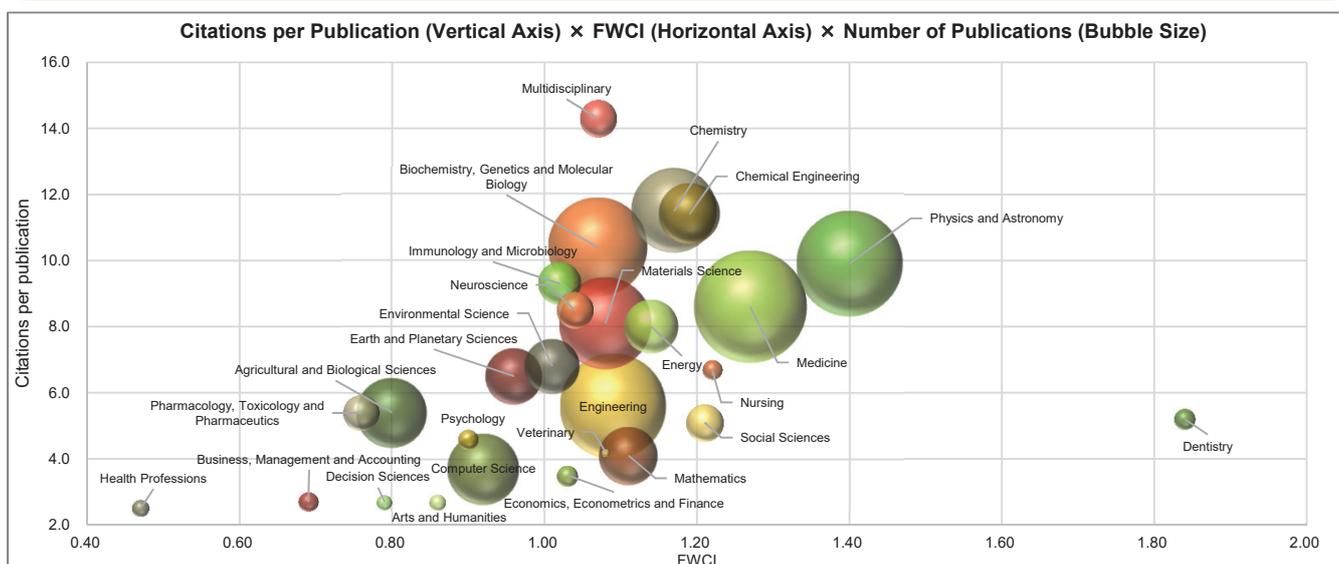


*Source: Elsevier's "SciVal" (as of September 2019)

9-2. Comparisons of Publication Quantity and Quality (Continued)

■ Comparison of Research Fields of Kyushu University Publications by ASJC 27 Subject Areas: 2014-2018

The further right and upward a field is positioned, the higher the FWCI and the number of citations per publication, indicating that it is a high-quality publication. The quality of publications in **Dentistry, Physics and Astronomy, Medicine, Multidisciplinary Fields, Chemistry, and Chemical Engineering** was particularly high. Multidisciplinary field is one in which publications are carried in general scientific magazines such as *Nature* and *Science*.



■ Comparison of Research Fields of Kyushu University Publications by ASJC 334 Fields: 2014-2018

Kyushu University has an FWCI greater than the global average of 1.0 in **144** of the 334 fields. The top 10 fields in which Kyushu University has a particularly high FWCI are listed below.

Rank	ASJC 27 Subject Areas	ASJC 334 Fields	FWCI
1	Nursing	Psychiatric Mental Health	9.12
2	Engineering	Engineering (miscellaneous)*1	3.67
3	Physics and Astronomy	Physics and Astronomy (miscellaneous)*2	3.26
4	Medicine	General Medicine	3.12
5	Environmental Science	Environmental Science (miscellaneous)*3	2.58
6	Dentistry	General Dentistry	2.54
7	Nursing	Advanced and Specialized Nursing	2.48
8	Chemistry	Chemistry (miscellaneous)*4	2.30
9	Earth and Planetary Sciences	Computers in Earth Sciences	2.17
9	Arts and Humanities	Conservation	2.17

*1 Engineering (miscellaneous) fields other than the following:

Aerospace Engineering; Automotive Engineering; Biomedical Engineering; Civil and Structural Engineering; Computational Mechanics; Control and Systems Engineering; Electrical and Electronic Engineering; Industrial and Manufacturing Engineering; Mechanical Engineering; Mechanics of Materials; Ocean Engineering; Safety, Risk, Reliability and Quality; Media Technology; Building and Construction; and Architecture.

*2 Physics and Astronomy (miscellaneous) fields other than the following:

Acoustics and Ultrasonics; Astronomy and Astrophysics; Condensed Matter Physics; Instrumentation; Nuclear and High Energy Physics; Atomic and Molecular Physics, and Optics; Radiation; Statistical and Nonlinear Physics; and Surfaces and Interfaces.

*3 Environmental Science (miscellaneous) fields other than the following:

Ecological Modeling; Ecology; Environmental Chemistry, Environmental Engineering; Global and planetary Change; Health, Toxicology and Mutagenesis; Management, Monitoring, Policy and Law; Nature and Landscape Conservation; Pollution; Waste Management and Disposal; and Water Science and Technology.

*4 Chemistry (miscellaneous) fields other than the following:

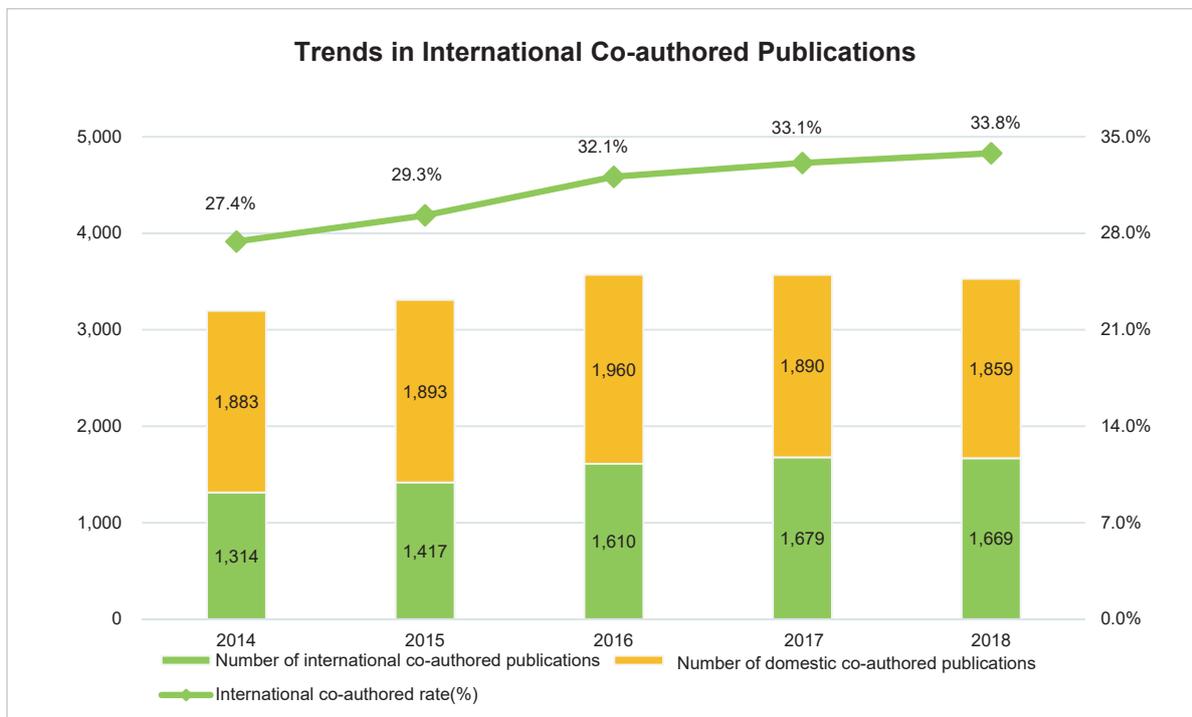
Analytical Chemistry; Electrochemistry; Inorganic Chemistry; Organic Chemistry; Physical and Theoretical Chemistry; and Spectroscopy.

*Source: Elsevier's "SciVal" (as of September 2019)

9-3. International Co-authored Publications

At Kyushu University, the number of International co-authored publications and the international co-authorship rate are both rising. international co-authored Publications grew 1.93 times between 2009 and 2018, and the percentage of international co-authored publications rose from 19.7% in 2009 to 33.8% in 2018. This rate of growth is the highest in the RU11.

◆Kyushu University◆



◆By Faculty◆(2014–2018) *

Rank	Faculty	Number of International Co-authored Publications (Total)	International Co-authorship Average Rate (%)
1	Faculty of Engineering	1,254	28.7
2	Faculty of Science	1,194	53.9
3	Faculty of Agriculture	653	37.3
4	Faculty of Information Science and Electrical Engineering	623	29.7
5	Faculty of Medical Sciences	529	11.0
6	Faculty of Engineering Sciences	423	36.4
7	Faculty of Pharmaceutical Sciences	215	24.1
8	Faculty of Arts and Science	204	38.9
9	Faculty of Dental Science	129	19.3
10	Faculty of Social and Cultural Studies	69	42.3
11	Faculty of Design	65	17.6
12	Faculty of Economics	59	39.9
13	Faculty of Human- Environment Studies	54	32.1
14	Faculty of Mathematics	30	20.0
15	Faculty of Law	7	24.1
16	Faculty of Humanities	2	8.3
17	Faculty of Languages and Cultures	0	0.0

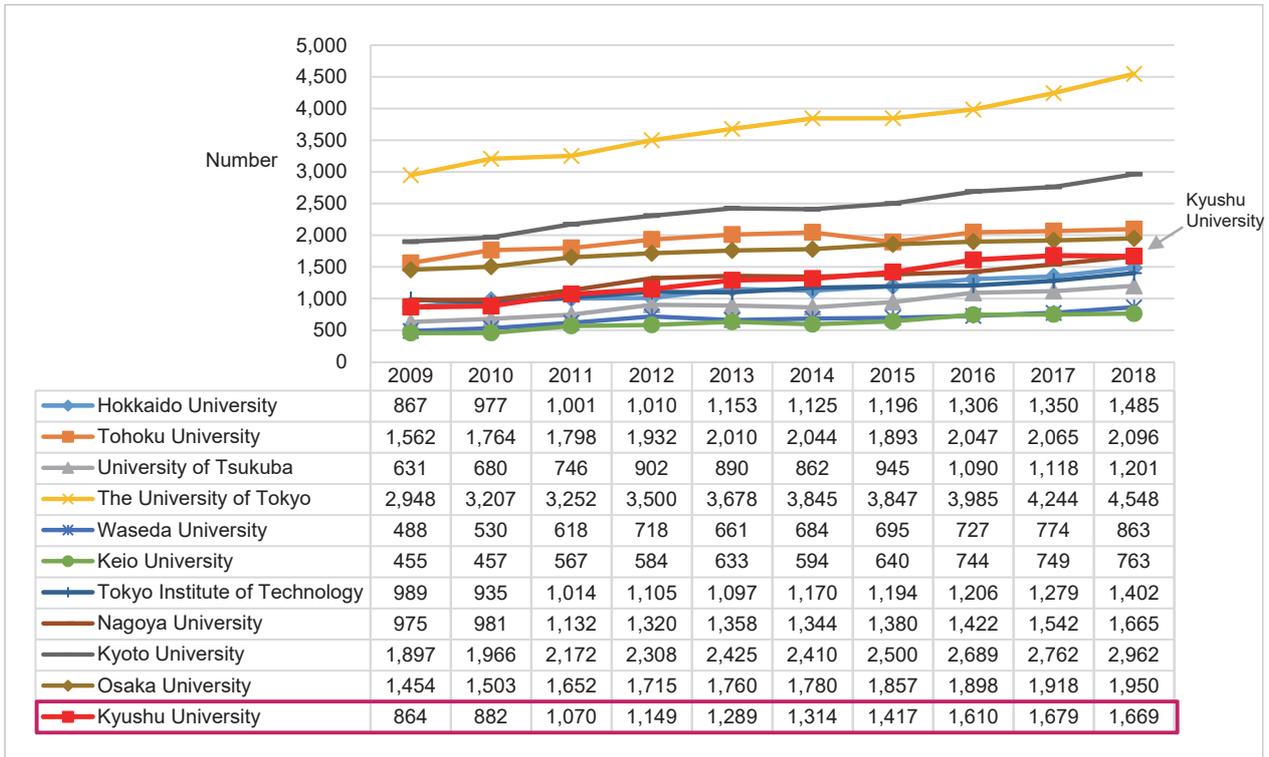
* Number of International Co-authored Publications : includes publications which published in the period 2014-2018 by our research fellows as of April 1, 2019 , including those at other institutions.

*Source: Elsevier's "SciVal" (as of September 2019)

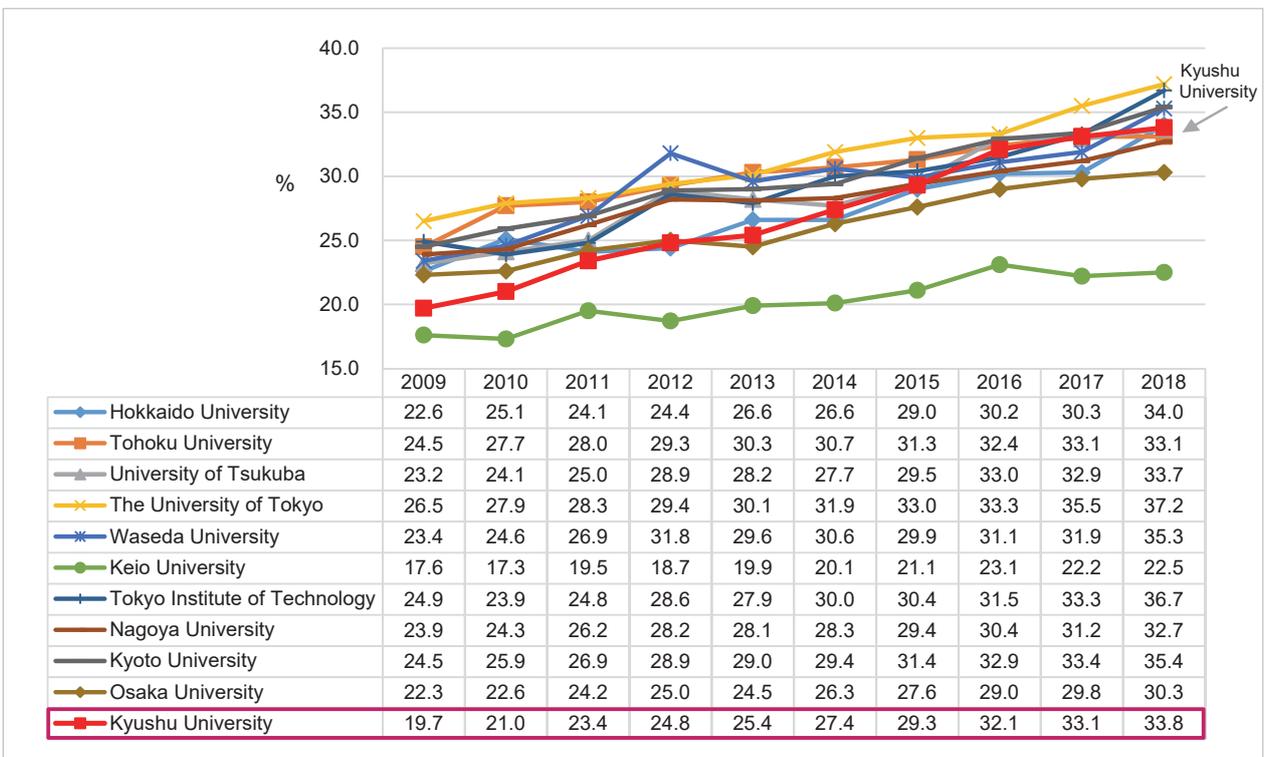
9-3. International Co-authored Publications (Continued)

◆ Comparison of the RU11 ◆ (2009-2018)

Number of International Co-authored Publications



International Co-authorship Rate



*Source: Elsevier's "SciVal" (as of September 2019)

9-3. International Co-authored Publications (Continued)

International Co-authorship with Institutions Worldwide: 2014-2018

North America
2,656 publications co-authored with 602 institutions



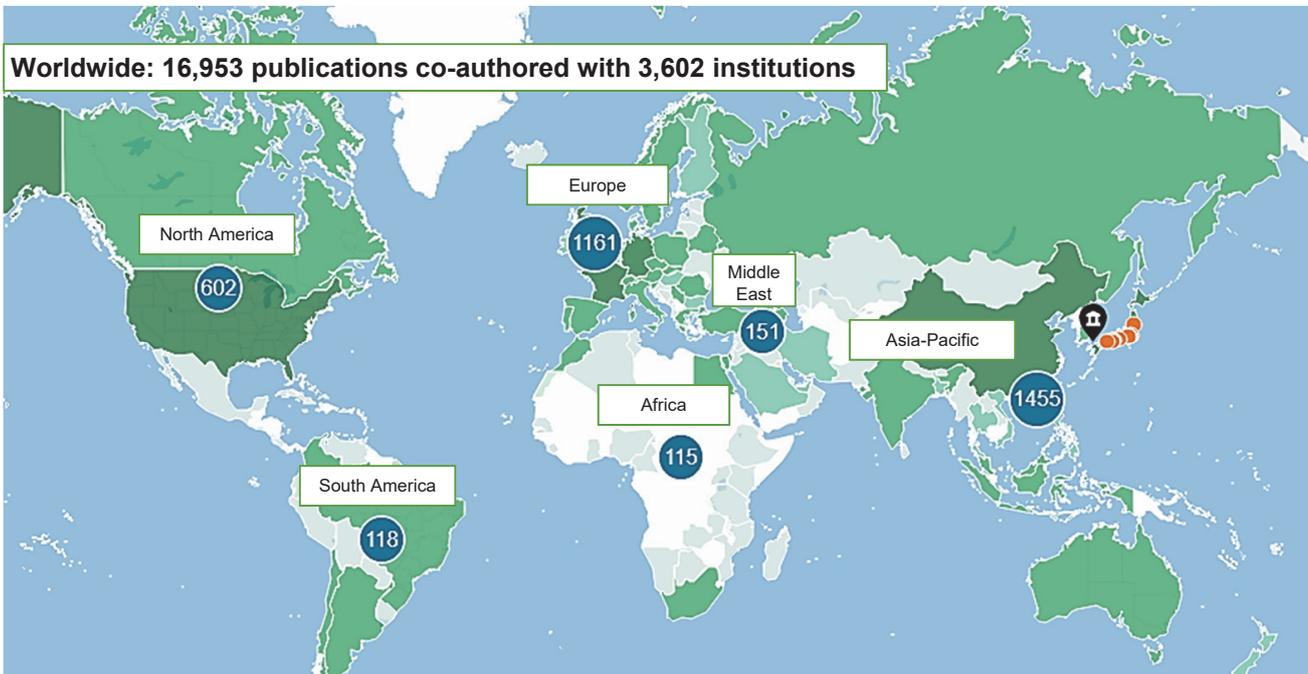
Europe
2,653 publications co-authored with 1,161 institutions



Asia-Pacific
15,059 publications co-authored with 1,455 institutions



Worldwide: 16,953 publications co-authored with 3,602 institutions



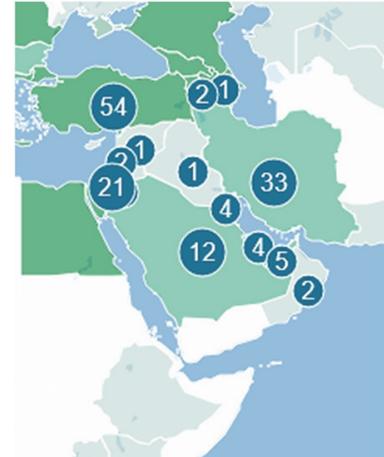
South America
667 publications co-authored with 118 institutions



Africa
1,069 publications co-authored with 115 institutions



Middle East
816 publications co-authored with 151 institutions



*Figures on the maps represent the number of institutions.

*Source: Elsevier's "SciVal" (as of September 2019)