



SCHOLARLY OUTPUT AND IMPACT

December 2021

Research Projects and Installation Research Projects 2015–2020

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Introduction

One of the major strategic goals of the Croatian Science Foundation (HRZZ) for the previous five-year period was to ensure stable investigator-driven and bottom-up funding for excellent research in all scientific disciplines based on the principle of competition and peer review. Two major national funding schemes during this period were Research Projects (IP) and Installation Research Projects (UIP).



Research Projects are aimed at nationally and internationally recognised scientists with significant track record. Applicants can request up to 1,5 million HRK for a period of 4 years. Between 2013 and 2020, six calls were published and 801 IPs were funded.

Installation Research Projects are aimed at early-career researchers who intend to lead an independent research project and establish a new research group. Applicants can request up to 2 million HRK for a period of 5 years. Between 2013 and 2020, five calls were published and 239 UIPs were funded.

To evaluate scholarly output and impact of IP and UIP projects from 2015 to 2020, various indicators were analysed in this report such as the number of publications, number of publications in top journals, Q1 and Q2 journals, citation count, collaboration type in publications etc.

The data and analyses used in this report were provided by Elsevier.

Methods

Data Sources

Bibliometric data extracted from Scopus were used in all analyses. Publications resulting from Research Projects (IP) and Installation Research Projects (UIP) were identified based on the grant number in the funding acknowledgement statement.

Analysed Period

Most of the analyses cover the period 2015–2020, but when performance is aggregated over a period, the most recent five years are considered (2016–2020).

Subject Breakdown

Publications are classified based on the All Science Journal Classification (ASJC) used by Scopus. The ASJC System is used by Scopus to classify research outputs under four major subject areas (life sciences, physical sciences, health sciences and social sciences) which are further divided into 27 categories and various subcategories. The ASJC system is adjusted for the national classification system of scientific fields and areas in most presented figures.





Benchmarking

Research performance of authors of IP and UIP publications is benchmarked against the performance of all authors affiliated to Croatian research performing organisations (RPOs).

Publication Types

Reported analyses include all publications that are indexed in Scopus from 2015 to 2020 (articles, conference papers, reviews, book chapters, notes, editorials, letters, articles in the press, short surveys, errata, books, conference reviews, business articles, abstract reports, retracted publications and reports).

Counting

Whole counting is used in the report. For example, if a paper has been co-authored by one author from Croatia and one author from Germany, then that paper counts towards both the publication count of Croatia, as well as the publication count of Germany. Total counts for each country are the unique count of publications.



Metrics

Citation count - the total number of citations received by all publications in the analysed set. The reported years are always years of publication and not the years in which citations were received.

Citations per Publication - the total number of citations received by a publication. The reported years are always years of publication and not the years in which citations were received.

CiteScore metrics - journal-level metrics reflecting the yearly average number of citations to recent articles published in that journal.

Field-Weighted Citation Impact (FWCI) - the ratio of the total number of citations received by the analysed publication set (denominator) and the total citations that would be expected based on the average of the subject field (numerator).

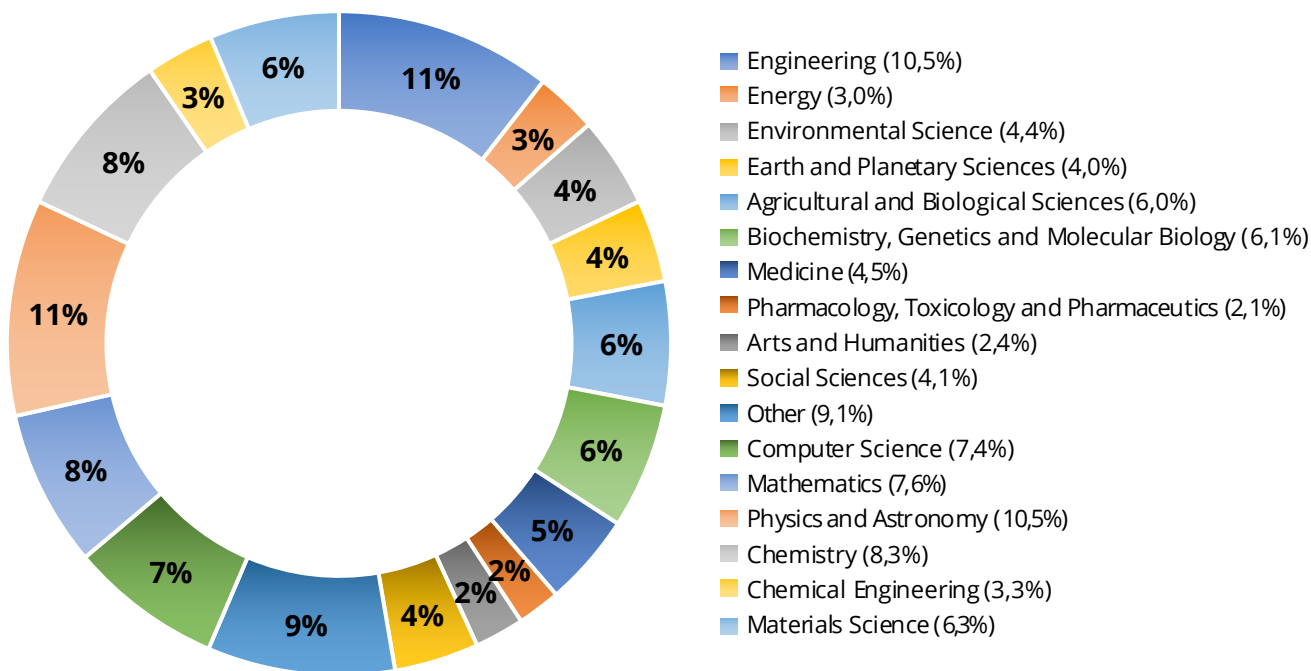
Scholarly output - the total count of publications in the analysed set indexed in Scopus.

Top Scopus sources - defined by the journal metrics SNIP (Source-Normalized Impact per Paper) or SJR (SCImago Journal Rank). Both journal metrics are field-normalised journal metrics, meaning that they can be used to compare the presence of publications in exceptional journals regardless of discipline. Scopus Source List include indexed publications that are either serial or non-serial. All journals covered in the Scopus database are ranked each year according to four types of numerical quality measure for each title; those are h-Index, CiteScore, SJR (SCImago Journal Rank) and SNIP (Source Normalized Impact per Paper).

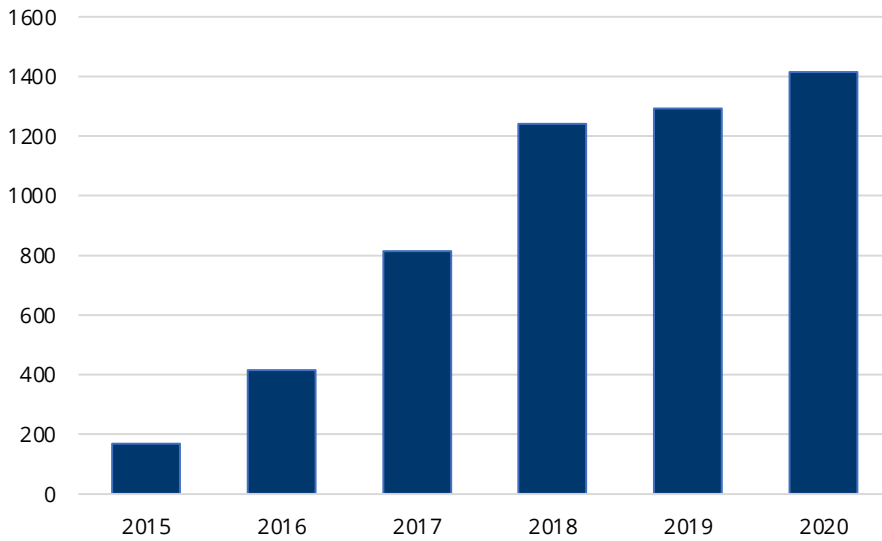


Results

IP and UIP Publications by ASJC Subject Area (2015–2020)

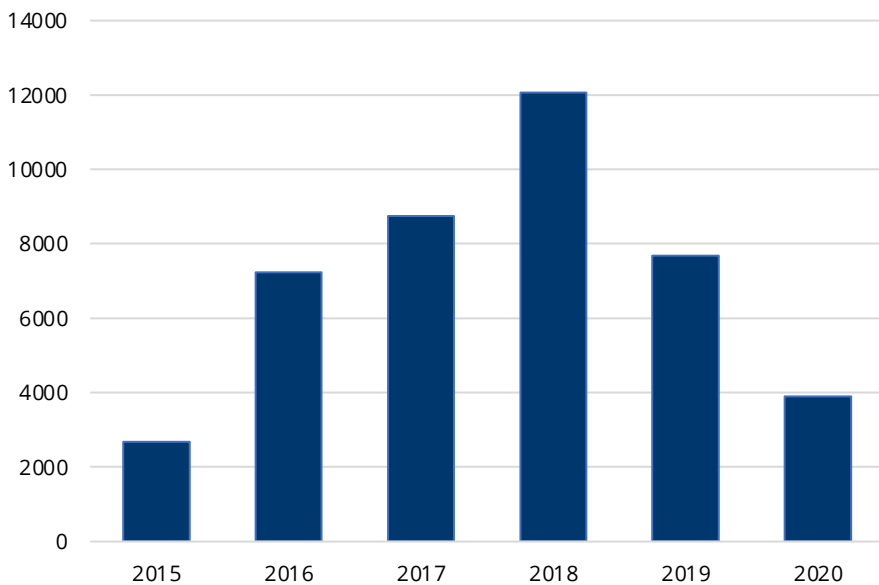


Scholarly Output of IPs and UIPs



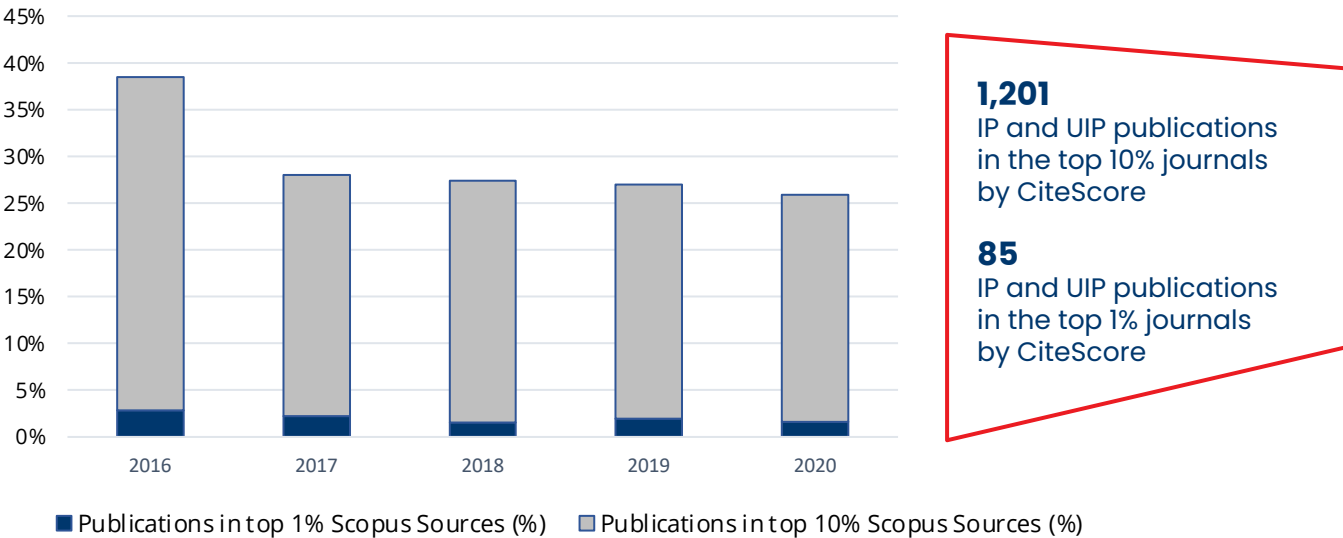
5,348
publications resulted
from IPs and UIPs
from 2015 to 2020

Citation Count of IP and UIP Publications

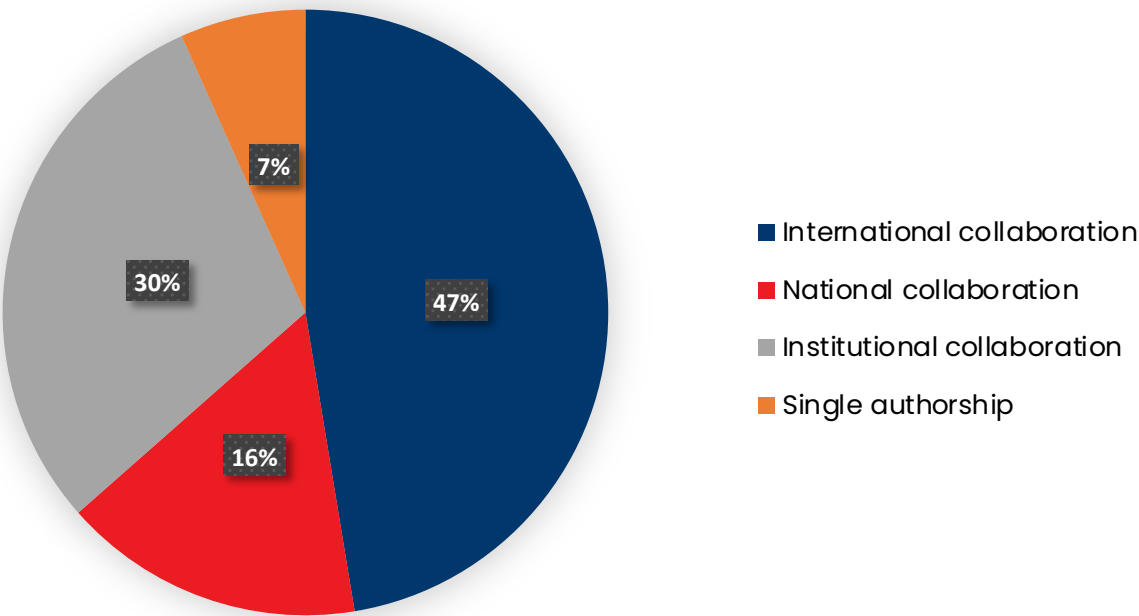


42,311
citations of IP and
UIP publications
from 2015 to 2020

IP and UIP Publications in Top Scopus Sources (2016–2020)



Collaboration in IP and UIP Publications (2015–2020)



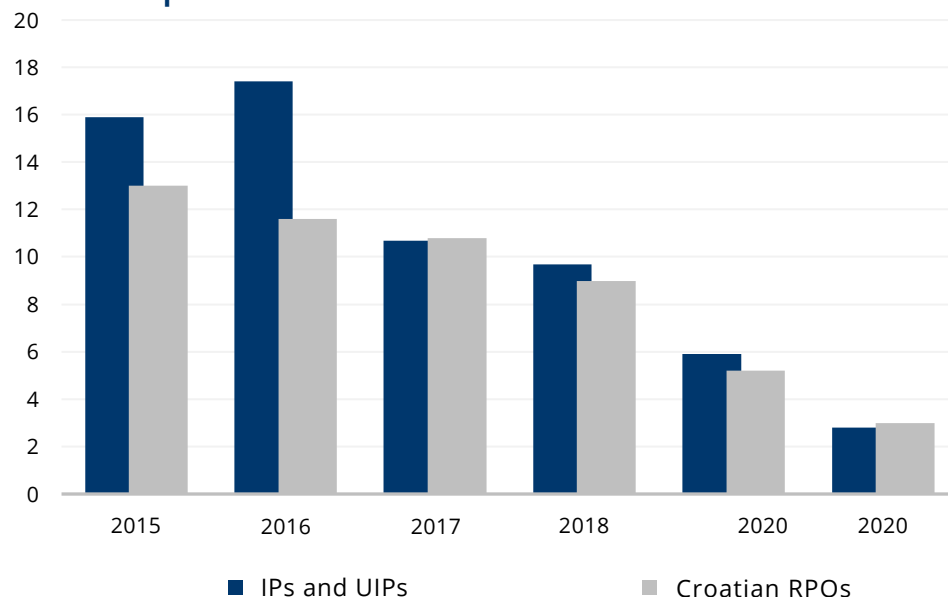
Type of collaboration	%	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact *
International collaboration	47,40%	2457	26254	10,7	1,37
National collaboration	16,10%	836	4546	5,4	0,81
Institutional collaboration	29,80%	1542	8086	5,2	0,9
Single authorship	6,70%	345	751	2,2	0,51

*FWCI of 1.00 indicates that the analysed set of publications is cited exactly as would be expected based on the global average for similar publications. An FWCI of more than 1.00 indicates that the analysed set of publications is cited more than expected according to the global average.

RPO	Citations per Publication	Field-Weighted Citation Impact
University of Split	12,4	1,59
Ruđer Bošković Institute	10,8	1,31
University of Rijeka	9,2	1,13
University of Zagreb	7,2	1,03
Josip Juraj Strossmayer University of Osijek	7,1	0,98

*Listed are the Croatian RPOs with the highest values for citations per publication and FWCI in the analysed set of IP and UIP publications.

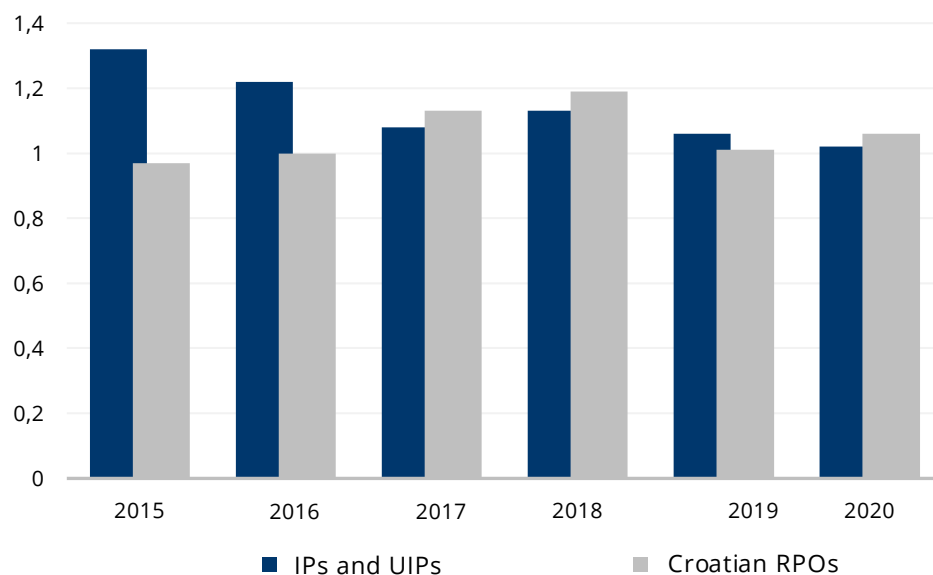
Citations per Publication



10,4
citations per
publication of IPs
and UIPs (2015-
2020)

8,8
citations per
publication of
Croatian RPOs
(2015-2020)

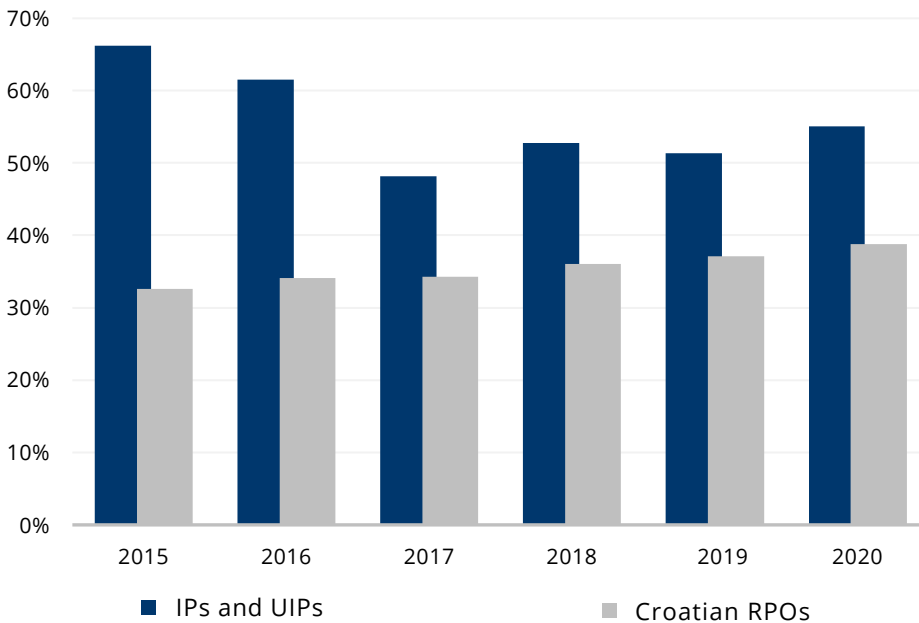
Field-Weighted Citation Impact (FWCI)



1,09
WCI of IP and UIP
publications (2015-
2020)

1,06
FWCI of all Croatian
RPOs (2015-2020)

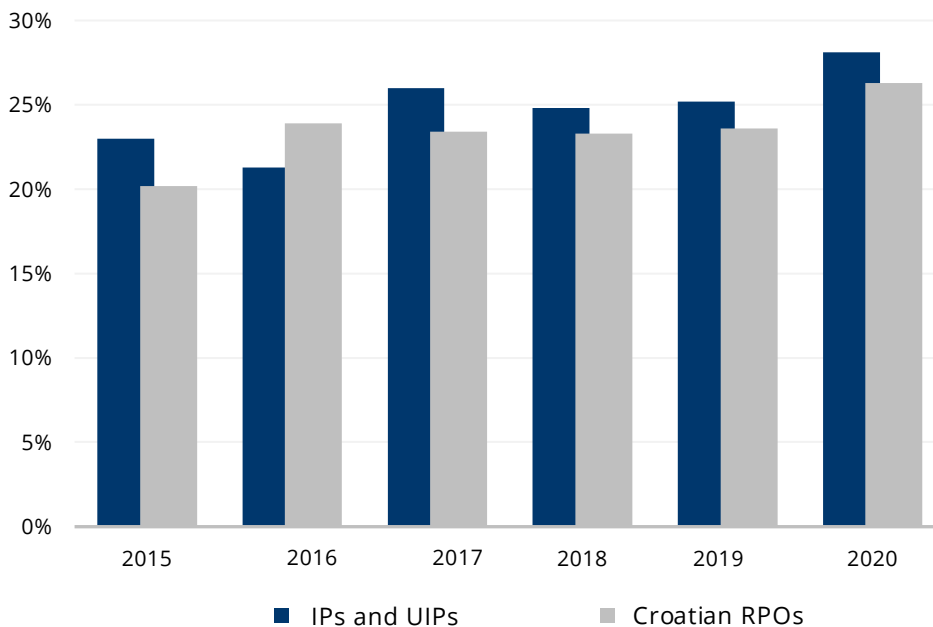
Publications in Q1 Journal Quartile by CiteScore (%)



56%
publications in Q1
Journal Quartile of
IPs and UIPs
(2015–2020)

36%
publications in Q1
Journal Quartile of
Croatian RPOs
(2015–2020)

Publications in Q2 Journal Quartile by Cite Score (%)

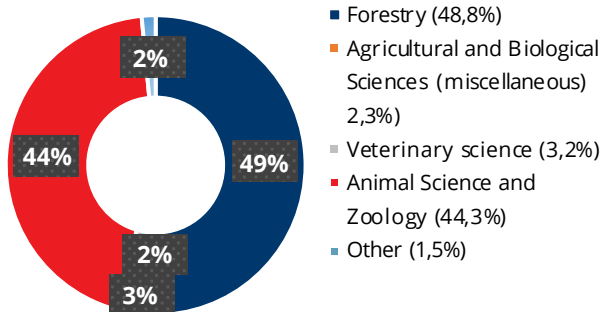


25%
publications in Q2
Journal Quartile of
IPs and UIPs
(2015–2020)

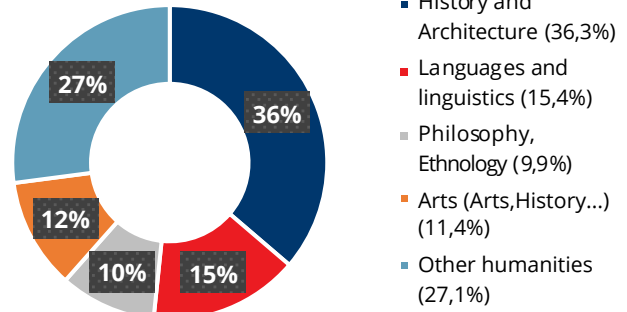
23%
publications in Q2
Journal Quartile of
Croatian RPOs
(2015–2020)

IP and UIP Publications by ASJC Subject Area* (2015–2020)

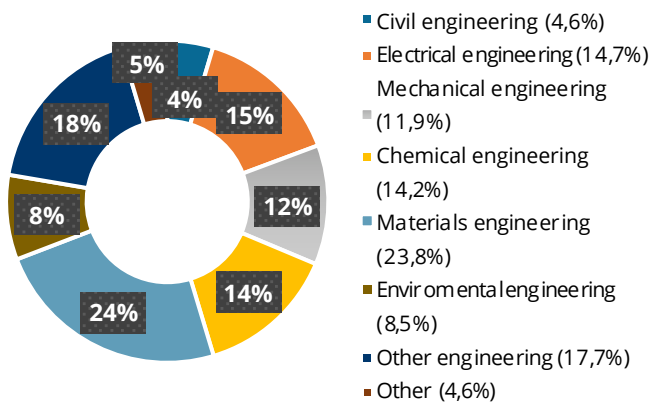
Agricultural Sciences



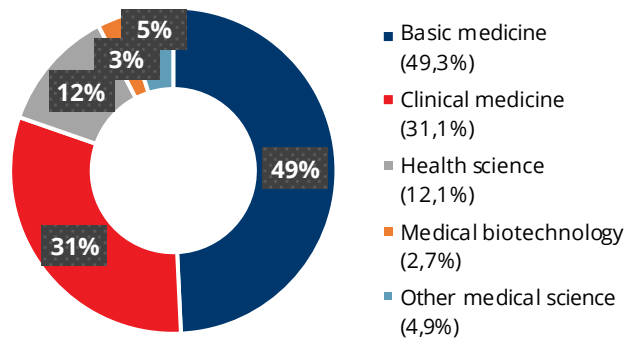
Humanities



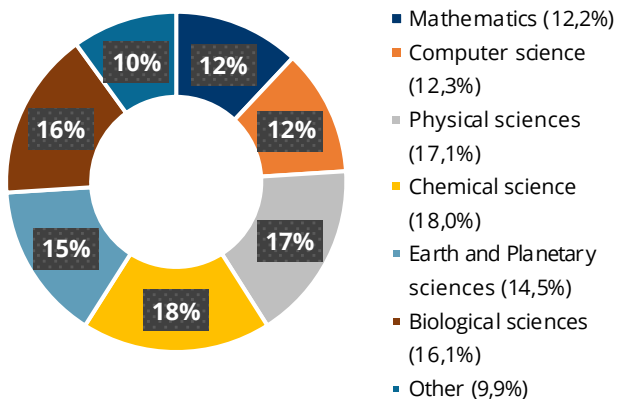
Engineering and Technologies



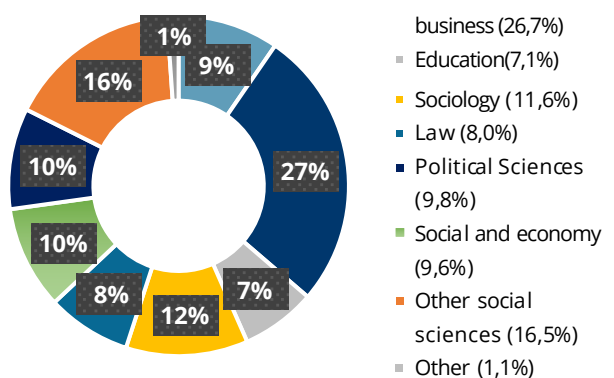
Medical Sciences



Natural Sciences



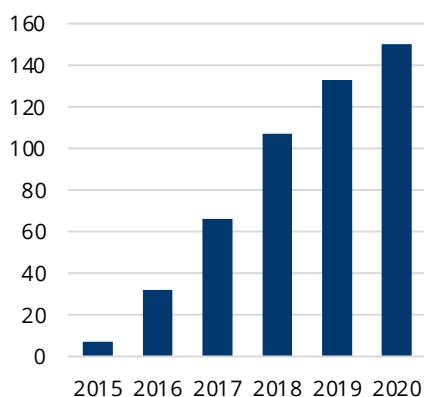
Social Sciences



*Adjusted for the national classification system of scientific fields and areas

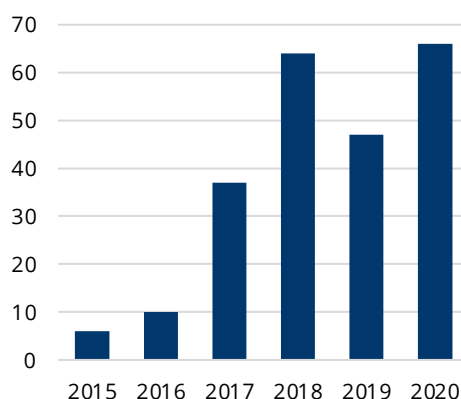
Scholarly Output of IPs and UIPs by ASJC Subject Area* (2015–2020)

Agricultural Sciences



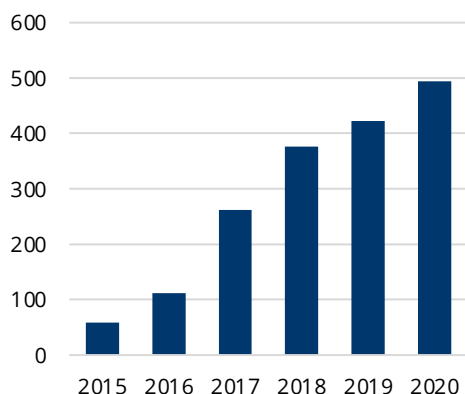
495
Publications

Humanities



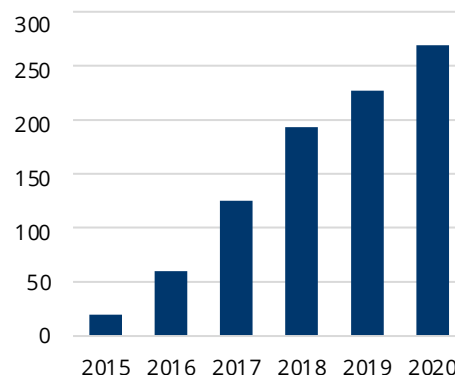
224
Publications

Engineering and Technologies



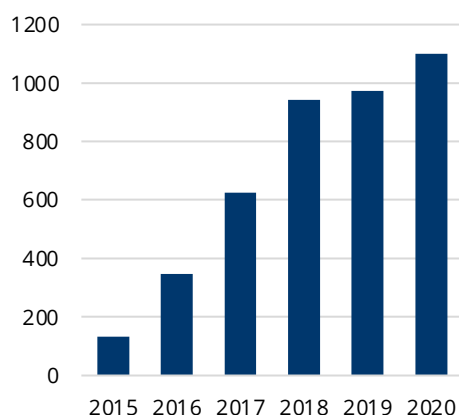
1,725
Publications

Medical Sciences



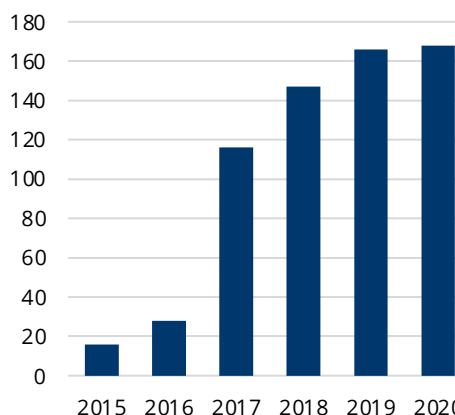
874
Publications

Natural Sciences



4,122
Publications

Social Sciences

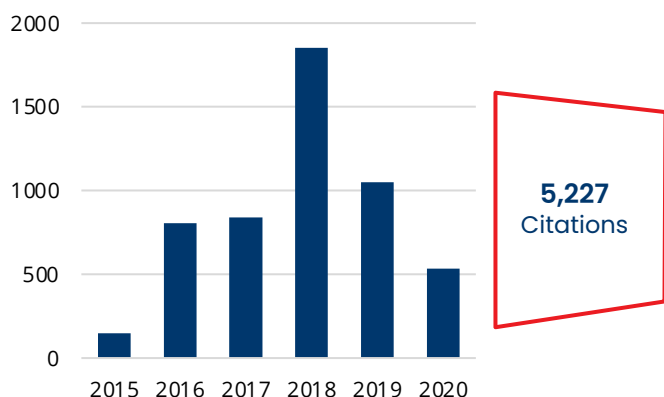


641
Publications

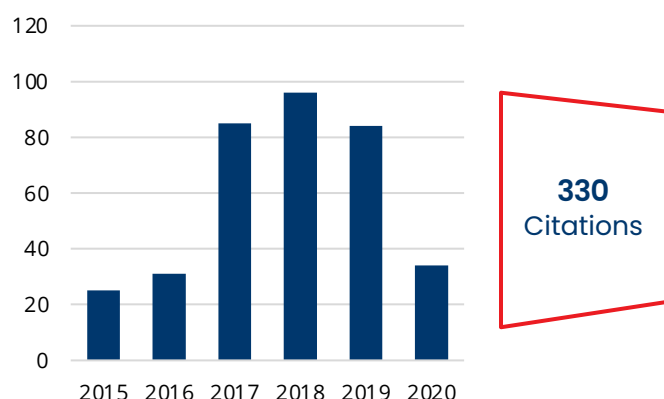
*Adjusted for the national classification system of scientific fields and areas

Citation Count of IP and UIP Publications by ASJC Subject Area* (2015–2020)

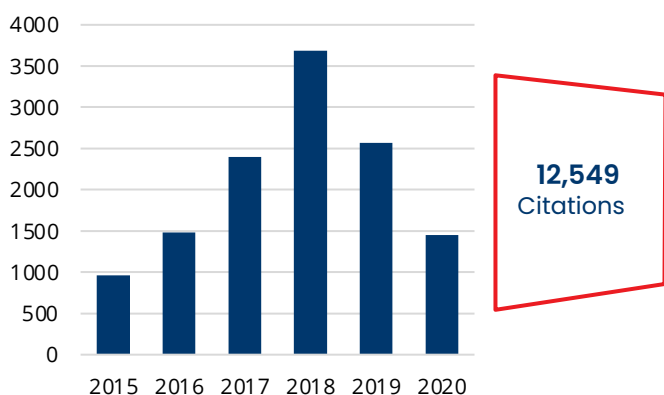
Agricultural Sciences



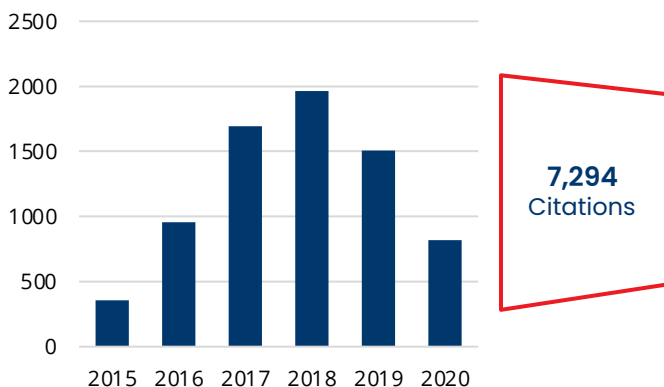
Humanities



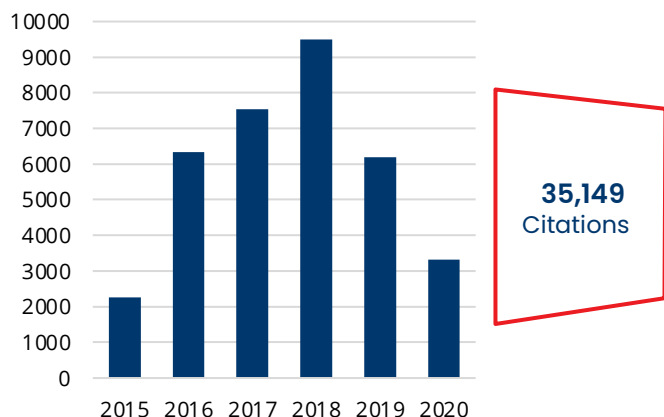
Engineering and Technologies



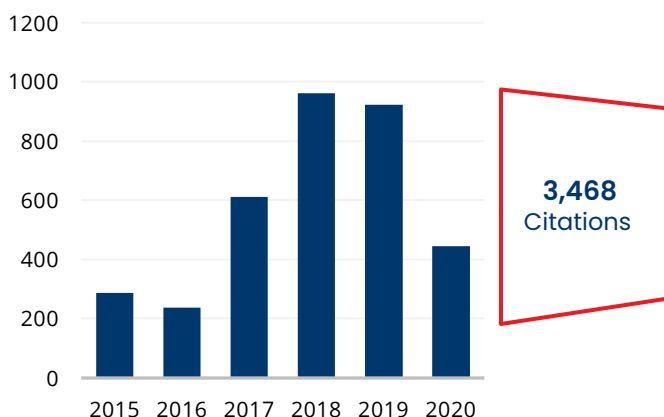
Medical Sciences



Natural Sciences



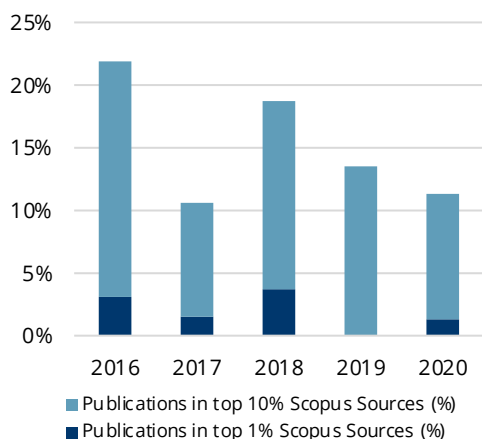
Social Sciences



*Adjusted for the national classification system of scientific fields and areas

IP and UIP Publications in Top Scopus Sources by ASJC Subject Area* (2016–2020)

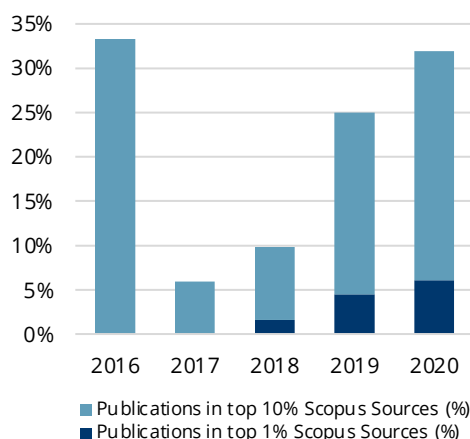
Agricultural Sciences



61
publications
in the top 10%
journals

9
publications
in the top 1%
journals

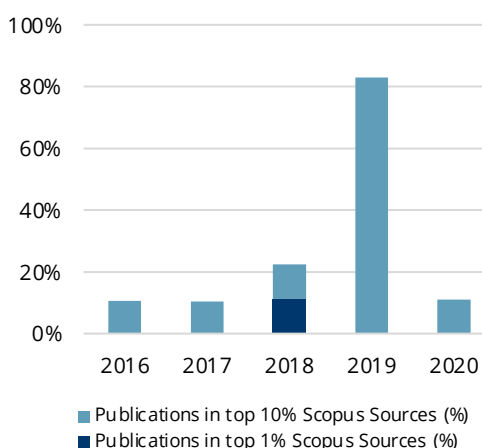
Humanities



35
publications
in the top 10%
journals

7
publications
in the top 1%
journals

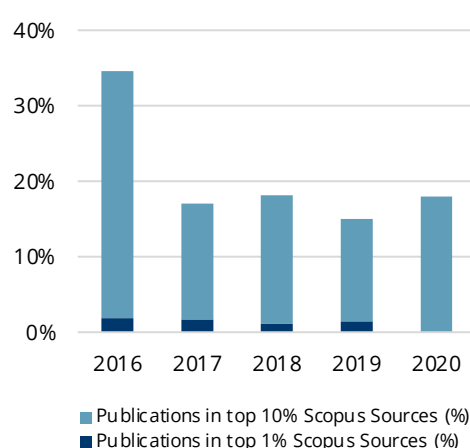
Engineering and Technologies



1,201
publications
in the top
10% journals

85
publications
in the top 1%
journals

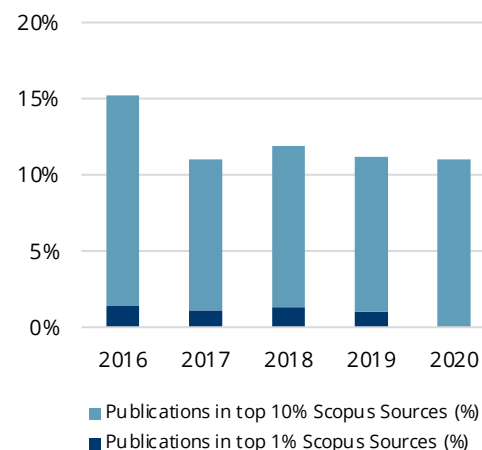
Medical Sciences



145
publications
in the top
10% journals

10
publications
in the top 1%
journals

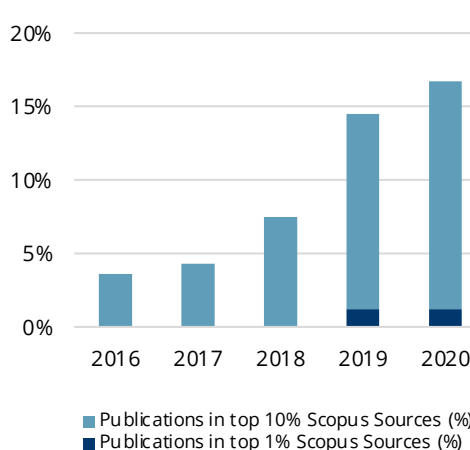
Natural sciences



1,201
publications
in the top
10% journals

85
publications
in the top 1%
journals

Social Sciences



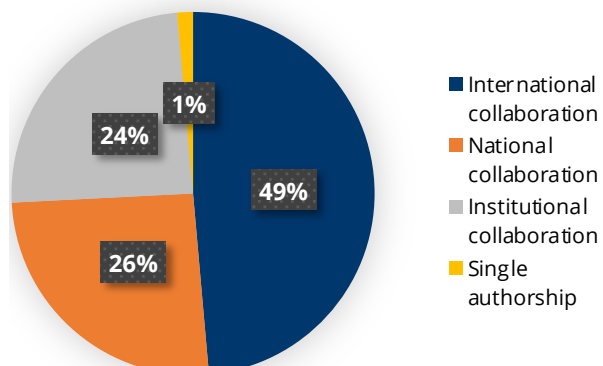
65
publications
in the top
10% journals

5
publications
in the top 1%
journals

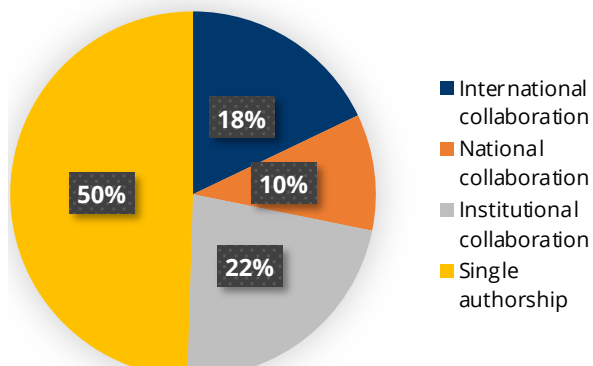
*Adjusted for the national classification system of scientific fields and areas

Collaboration in IP and UIP Publications by ASJC Subject Area* (2015–2020)

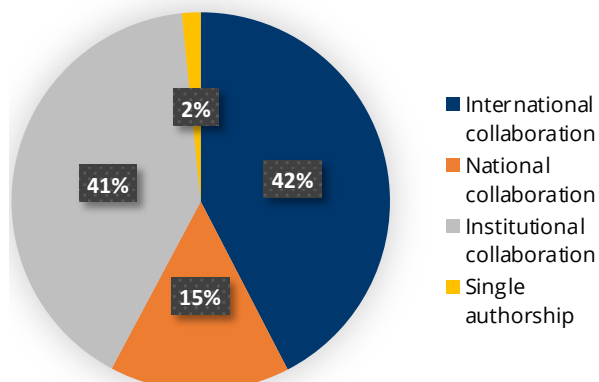
Agricultural Sciences



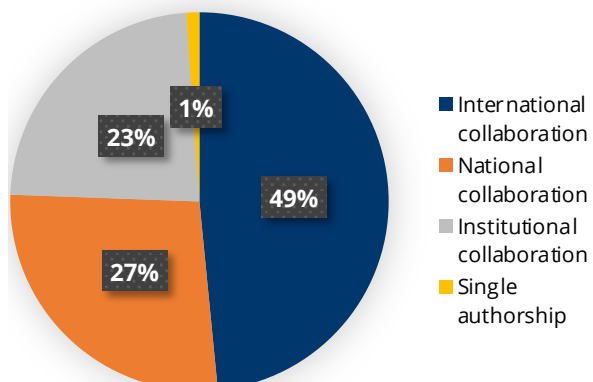
Humanities



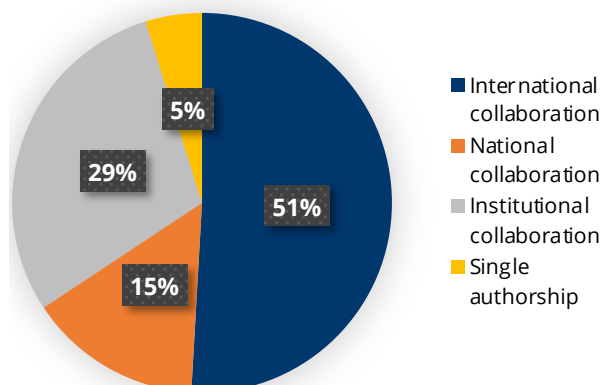
Engineering and Technologies



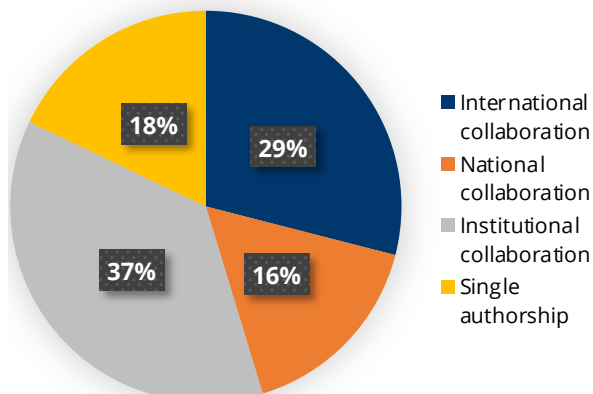
Medical Sciences



Natural Sciences



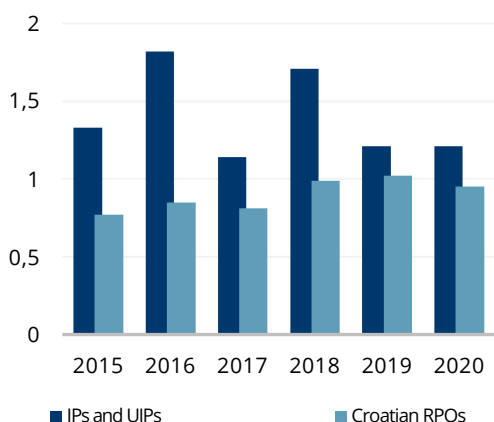
Social Sciences



*Adjusted for the national classification system of scientific fields and areas

Field-Weighted Citation Impact by ASJC Subject Area* (2015–2020)

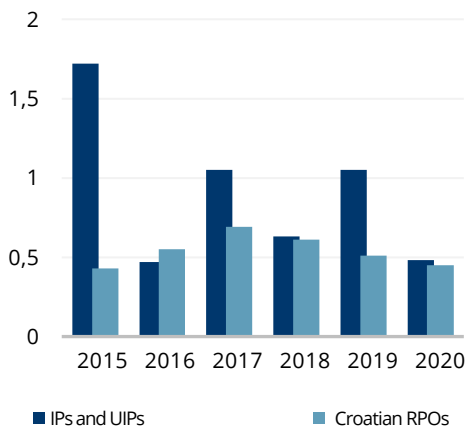
Agricultural Sciences



1,35
FWCI of IPs
and UIPs
publications

0,91
FWCI of all
Croatian
RPOs

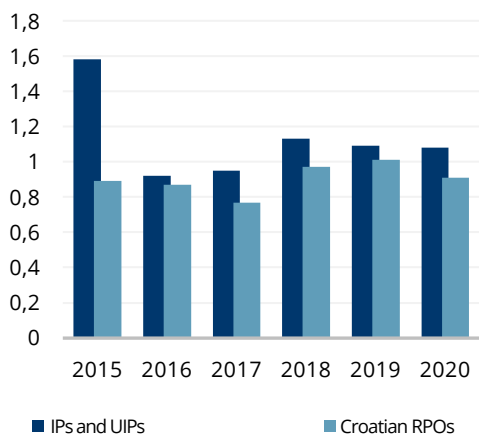
Humanities



0,76
FWCI of IPs
and UIPs
publications

0,54
FWCI of all
Croatian
RPOs

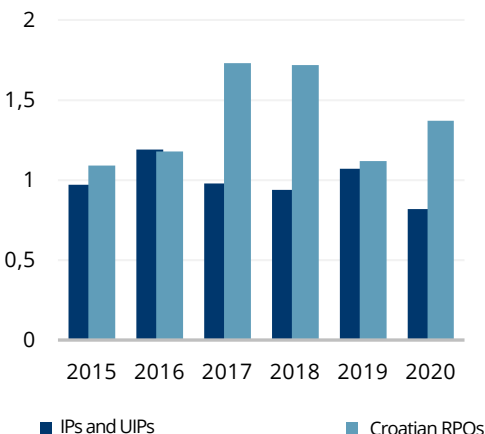
Engineering and Technologies



1,08
FWCI of IPs
and UIPs
publications

0,91
FWCI of all
Croatian
RPOs

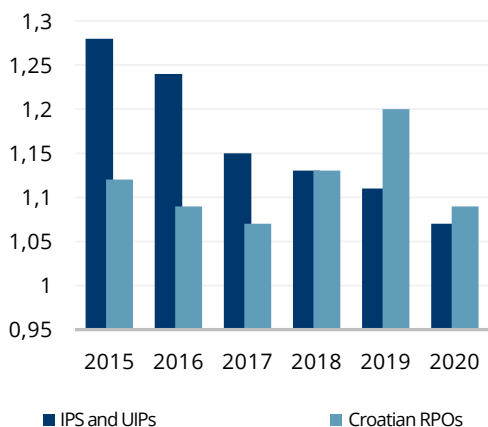
Medical Sciences



0,96
FWCI of IPs
and UIPs
publications

1,37
FWCI of all
Croatian
RPOs

Natural Sciences



1,13
FWCI of IPs
and UIPs
publications

1,12
FWCI of all
Croatian
RPOs

Social Sciences



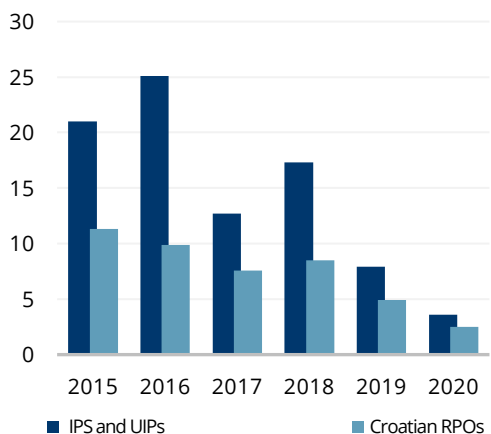
1,08
FWCI of IPs
and UIPs
publications

0,76
FWCI of all
Croatian
RPOs

*Adjusted for the national classification system of scientific fields and areas

Citations per Publication by ASJC Subject Area* (2015–2020)

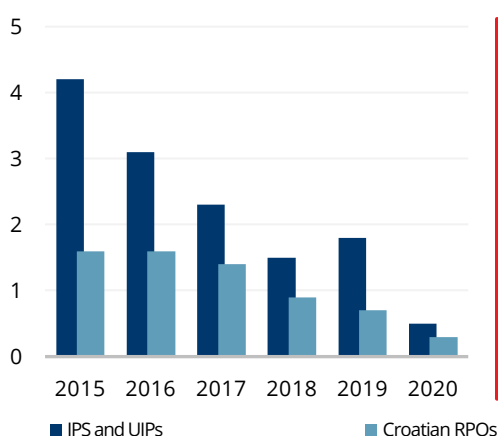
Agricultural Sciences



10,6
IPs and UIPs

7,2
Croatian RPOs

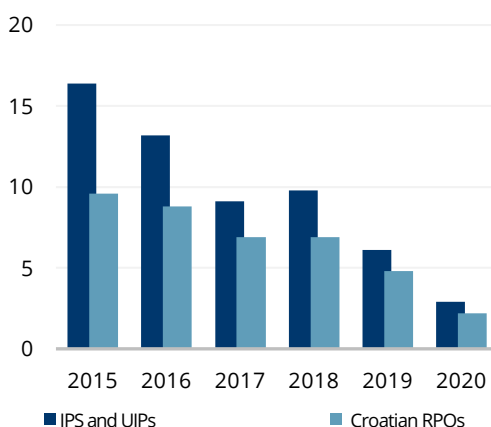
Humanities



1,5
IPs and UIPs

1,1
Croatian RPOs

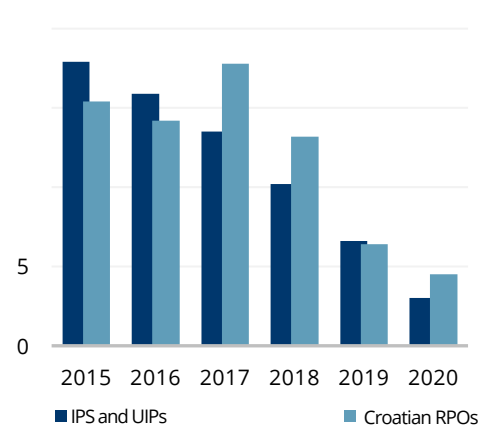
Engineering and Technologies



7,3
IPs and UIPs

6,3
Croatian RPOs

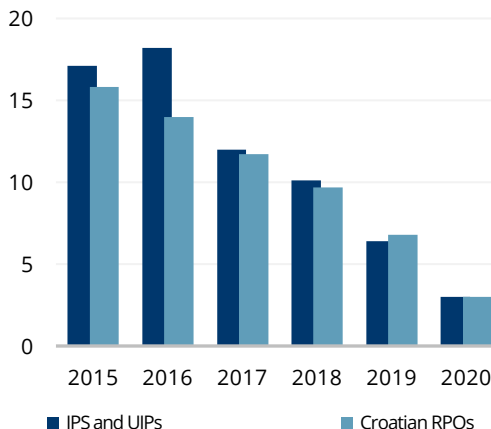
Medical Sciences



8,2
IPs and UIPs

11,4
Croatian RPOs

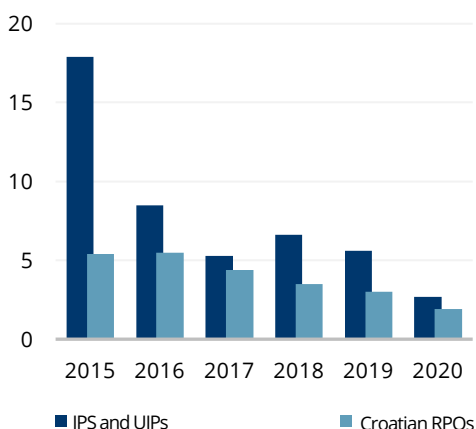
Natural Sciences



11,1
IPs and UIPs

10,1
Croatian RPOs

Social Sciences



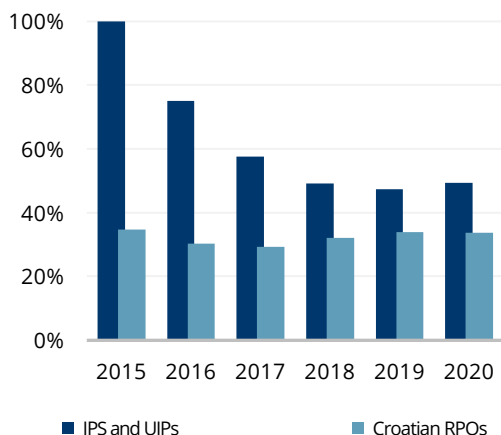
5,4
IPs and UIPs

3,8
Croatian RPOs

*Adjusted for the national classification system of scientific fields and areas

Publications in Q1 Journal Quartile by AJSC Subject Area* based on CiteScore (2015–2020)

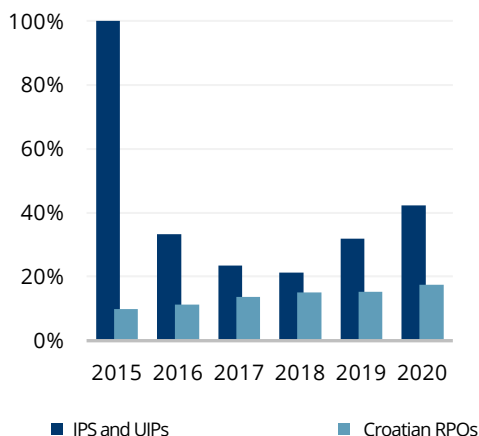
Agricultural Sciences



52%
of IPs and UIPs
publications

32%
of Croatian
RPOs
publications

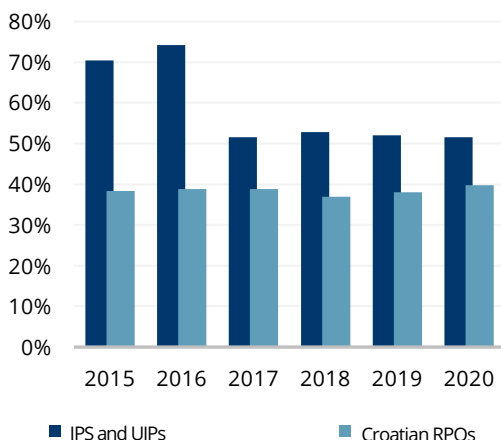
Humanities



32%
of IPs and UIPs
publications

14%
of Croatian
RPOs
publications

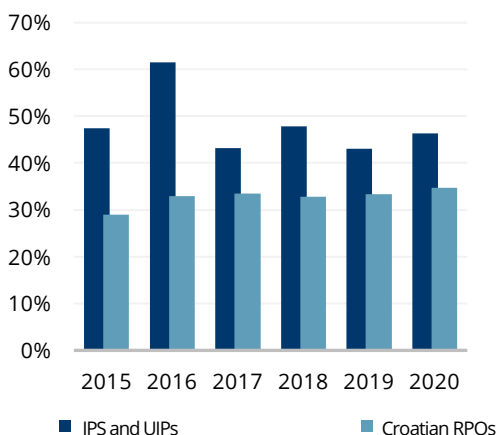
Engineering and Technologies



54%
of IPs and UIPs
publications

39%
of Croatian
RPOs
publications

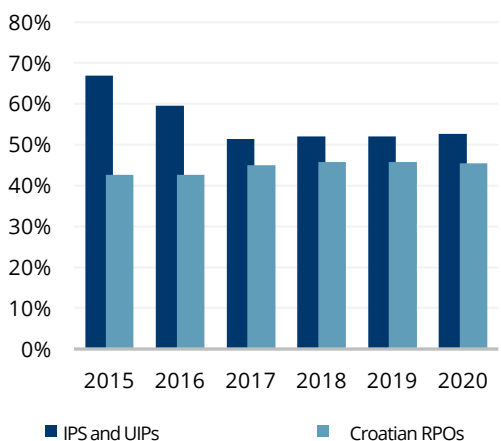
Medical Sciences



46%
of IPs and UIPs
publications

33%
of Croatian
RPOs
publications

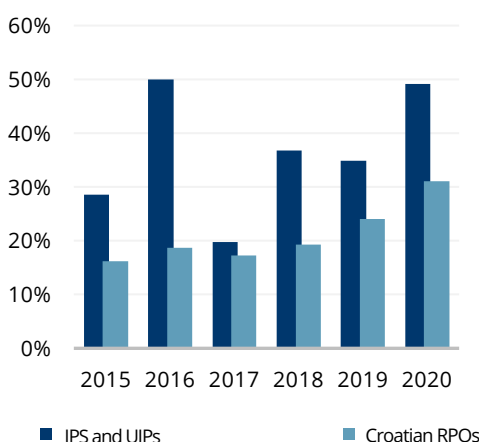
Natural Sciences



53%
of IPs and UIPs
publications

45%
of Croatian
RPOs
publications

Social Sciences



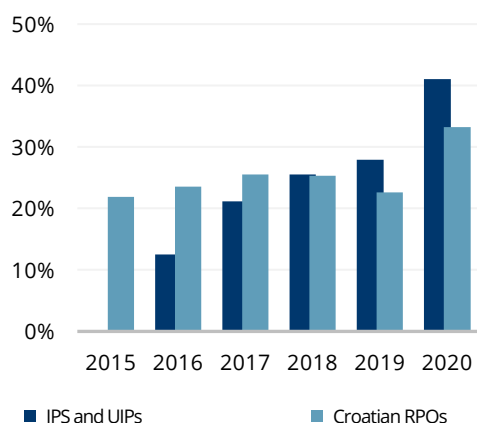
38%
of IPs and UIPs
publications

22%
of Croatian
RPOs
publications

*Adjusted for the national classification system of scientific fields and areas

Publications in Q2 Journal Quartile by ASJC Subject Area* based on CiteScore (2015–2020)

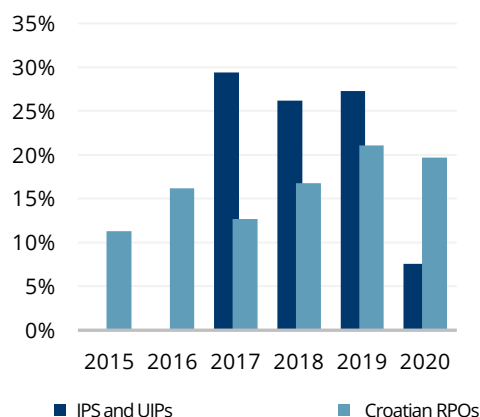
Agricultural Sciences



29%
of IPs and UIPs
publications

26%
of Croatian
RPOs
publications

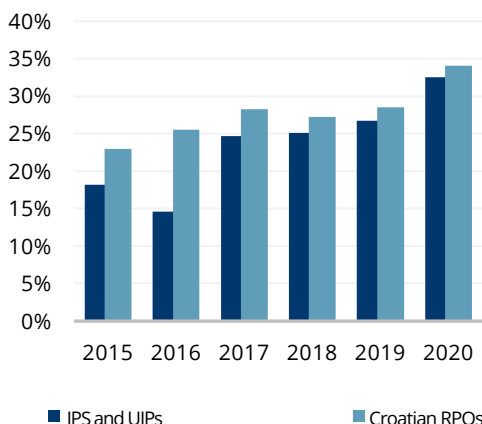
Humanities



20%
of IPs and UIPs
publications

17%
of Croatian
RPOs
publications

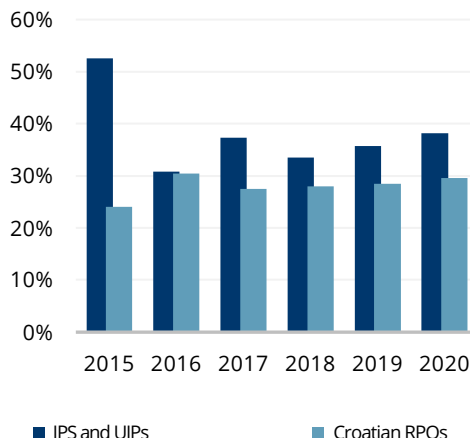
Engineering and Technologies



27%
of IPs and UIPs
publications

28%
of Croatian
RPOs
publications

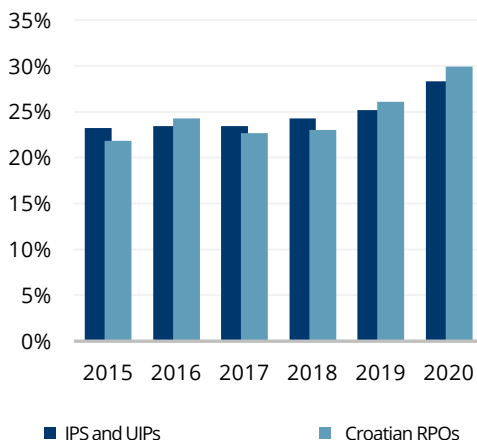
Medical Sciences



36%
of IPs and UIPs
publications

28%
of Croatian
RPOs
publications

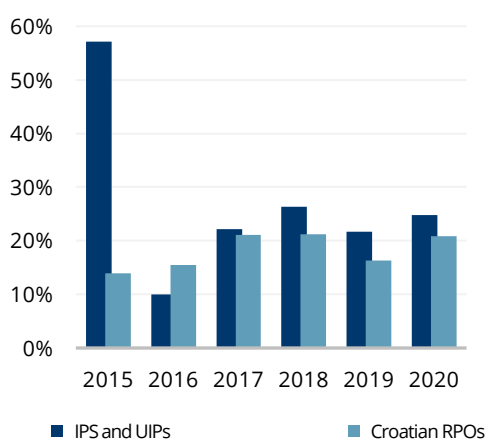
Natural Sciences



25%
of IPs and UIPs
publications

25%
of Croatian
RPOs
publications

Social Sciences



24%
of IPs and UIPs
publications

19%
of Croatian
RPOs
publications

*Adjusted for the national classification system of scientific fields and areas

Collaboration in IP and UIP Publications by ASJC Subject Area* based on CiteScore (2015–2020)

Agricultural Sciences

Type of collaboration	%	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	48,60%	237	3253	13,7	1,8
National collaboration	25,60%	125	743	5,9	0,93
Institutional collaboration	24,40%	119	1059	8,9	0,92
Single authorship	1,40%	7	25	3,6	0,95

Humanities

Type of collaboration	%	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	17,90%	40	137	3,4	1,33
National collaboration	10,30%	23	56	2,4	0,9
Institutional collaboration	22,30%	50	86	1,7	1,01
Single authorship	49,50%	111	51	0,5	0,36



Engineering and Technologies

Type of collaboration	%	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	42,40%	707	6581	9,3	1,24
National collaboration	15,40%	256	1256	4,9	0,76
Institutional collaboration	40,60%	676	3602	5,3	1,01
Single authorship	1,60%	27	145	5,4	0,68

Medical Sciences

Type of collaboration	%	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	48,40%	423	3916	9,3	1,09
National collaboration	27,10%	237	1701	7,2	0,89
Institutional collaboration	23,30%	204	1270	6,2	0,77
Single authorship	1,10%	10	49	4,9	0,61

Natural Sciences

Type of collaboration	%	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	50,90%	2031	22390	11	1,38
National collaboration	14,80%	591	3422	5,8	0,83
Institutional collaboration	29,50%	1178	6552	5,6	0,92
Single authorship	4,80%	190	531	2,8	0,51

Social Sciences

Type of collaboration	%	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	29,00%	181	1518	8,4	1,57
National collaboration	16,30%	102	399	3,9	0,99
Institutional collaboration	36,80%	230	1022	4,4	0,96
Single authorship	17,90%	112	242	2,2	0,46

*Adjusted for the national classification system of scientific fields and areas



The Institutions with the Highest Citations per Publication and Field-Weighted Citation Impact values by ASJC Subject Area* (2015–2020)

Agricultural Sciences

Institution	Citations per Publication	Field-Weighted Citation Impact
University of Zagreb	12,4	1,46
University of Split	8,7	1,3
Josip Juraj Strossmayer University of Osijek	7,8	1,02
Institute of Oceanography and Fisheries	7,6	1,25
Ruđer Bošković Institute	6,7	0,9

Humanities

Institution	Citations per Publication	Field-Weighted Citation Impact
University of Rijeka	3,4	1,46
University of Zagreb	2,2	0,89
University of Zadar	1,8	0,61
Josip Juraj Strossmayer University of Osijek	0,7	0,36
Croatian Academy of Sciences and Arts	0,6	0,59



Engineering and Technologies

Institution	Citations per Publication	Field-Weighted Citation Impact
University of Split	9,1	1,45
Ruđer Bošković Institute	8,7	1,13
Josip Juraj Strossmayer University of Osijek	8,3	1,09
University of Zagreb	6,4	1,02
University of Rijeka	5,8	1,03

Medical Sciences

Institution	Citations per Publication	Field-Weighted Citation Impact
University of Rijeka	13,6	1,3
Josip Juraj Strossmayer University of Osijek	8	1,19
Ruđer Bošković Institute	7,9	0,92
University of Zagreb	7,7	0,95
University of Split	6,7	0,9

Natural Sciences

Institution	Citations per Publication	Field-Weighted Citation Impact
University of Split	14,2	1,8
Ruđer Bošković Institute	11,1	1,35
University of Rijeka	9,6	1,12
University of Zagreb	7,4	1,03
Josip Juraj Strossmayer University of Osijek	7,4	0,99

Social Sciences

Institution	Citations per Publication	Field-Weighted Citation Impact
University of Split	8,7	1,36
University of Zadar	6,9	2,39
Josip Juraj Strossmayer University of Osijek	5,3	1,09
University of Zagreb	5	1,06
University of Rijeka	4	0,95

*Adjusted for the national classification system of scientific fields and areas

**Listed are the Croatian RPOs with the highest values for citations per publication and FWCI in the analysed set of IP and UIP publications

Conclusion

Presented data indicate positive trends in scholarly output and impact as well as international collaborations in scientific co-publications of IP and UIP projects in the period 2015–2020. Furthermore, the amount of funding per IP/UIP projects was significant and increasing over the years, which enabled Croatian researchers to become more visible and competitive. In conclusion, the major strategic goal of HRZZ to ensure stable investigator-driven and bottom-up funding for excellent research based on competition and peer review is proving to be a valuable approach for increasing the overall quality of Croatian research landscape.



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