

# Analysis of open-access articles before and after implementing open science policies - a case study of Rijeka University, Croatia

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**Background:** Open science is „the opening of the entire research process, i.e., conducting scientific research in an open and collaborative manner that allows for the participation and use of all results of research activities in a transparent manner“(1). It is very important that institutions adopt open science policies and implement open science practices in order to raise quality of their scientific output. Rijeka University was the first institution in Croatia with a declaration on open science (2), open science policy and [open science office](#). Croatia is one of the top open access countries (3).

**Aim:** We have compared open-access articles in different scientific fields before and after implementing open science policies in order to measure their implementation at the University of Rijeka, Croatia.

**Methods:** We have searched Scopus bibliographic database and compared open-access articles before (2017-2019) and after (2020-2022) implementing open science policies at the University of Rijeka, Croatia. The Scopus search was done through a query string that includes affiliation field code (University of Rijeka). The data were further refined according to range of years (2017-2019 / 2020-2022), document type (article) and subject area field code. We have also compared the open-access articles by field before and after the implementation. The proportions were compared with test of proportions.

**Results:** Overall, there has been 1370 articles published in 2017-2019 and 1945 in 2020-2022 (Figure 1, Table 1), which is an increase of 42% (Table 1). Fifty-five percent (755 out of 1370) of articles are in open-access for the period 2017-2019, while there are significantly more open-access articles ( $p < 0.001$ ) – 70% (1370 out of 1945) in 2020-2022 (Figure 2). Proportion of open-access articles were larger in 2020-2022 in all fields except for biomedicine and art and humanities (Figure 3).

**Conclusion:** It seems that implementation of open science policies at the University of Rijeka gave positive results in regards to open-access articles. Open science promotion may have influenced authors to publish more open-access articles.

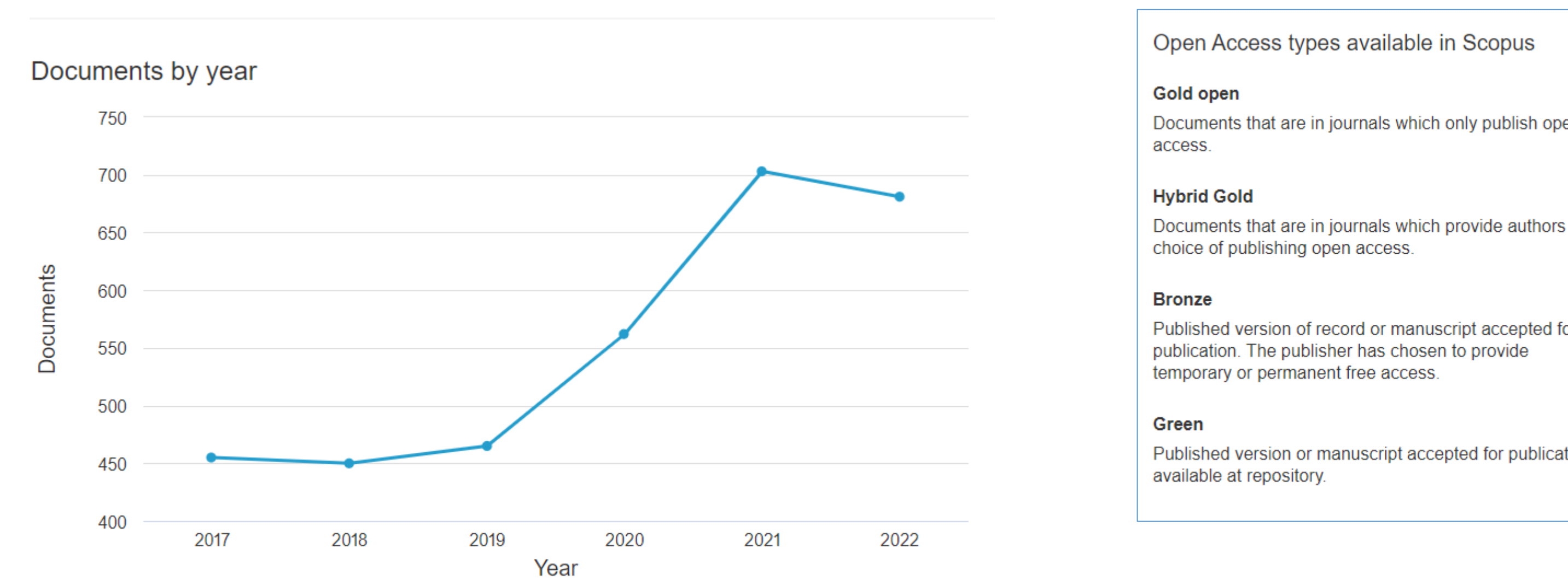


Figure 1. Articles published at the University of Rijeka (2017-2022)

Table 1. Characteristics of articles published at the University of Rijeka (Croatia) before and after implementing open science policies

Variable	Before implementing open science policies (2017-2019)	After implementing open science policies (2020-2022)	<i>p</i>
	n (%)	n (%)	
Total number of articles	1370	1945	/
All open access articles	755 (55)	1370 (70)	<0.001
Gold articles	429 (31)	971 (50)	<0.001
Hybrid Gold articles	44 (3)	86 (4)	0.775
Bronze articles	141 (10)	169 (9)	0.765
Green articles	572 (42)	781 (40)	0.460
Articles (open access articles, % open access) by field*			
Arts and Humanities	86 (32; 37%)	114 (53; 46%)	0.203
Biochemistry and Chemistry	297 (136; 46%)	252 (190; 75%)	<0.001
Engineering	296(170; 57%)	449 (350; 78%)	<0.001
Mathematics	136 (71; 52%)	167 (113; 68%)	0.005
Medicine	365 (206; 67%)	535 (369; 69%)	0.527
Social Sciences (Social sciences+psychology+Business+Economy)	362 (208; 57%)	548 (388; 71%)	<0.001

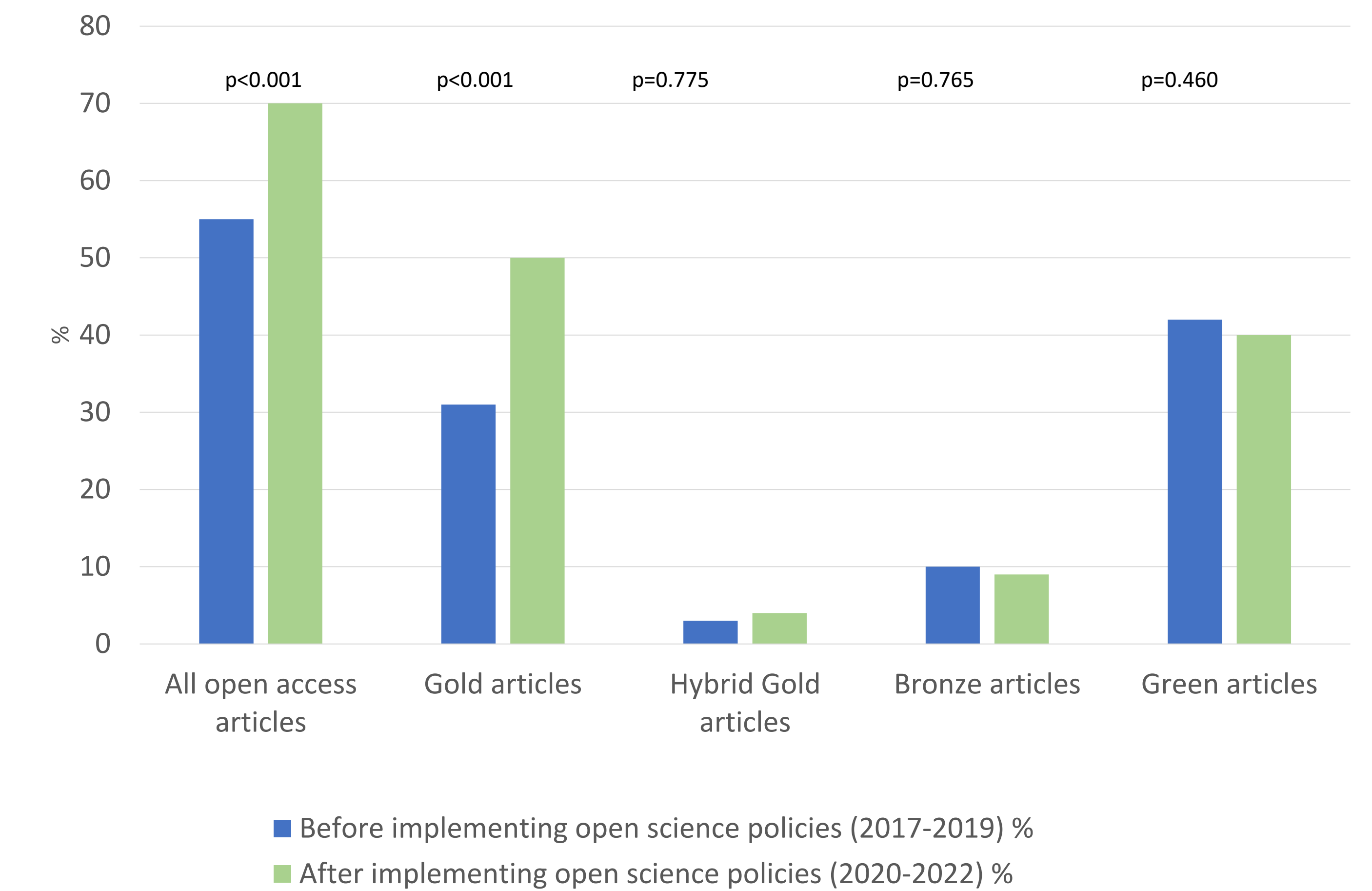


Figure 2. Relative frequency of open-access articles by type before (2017-2019) and after (2020-2022) implementing open science policies

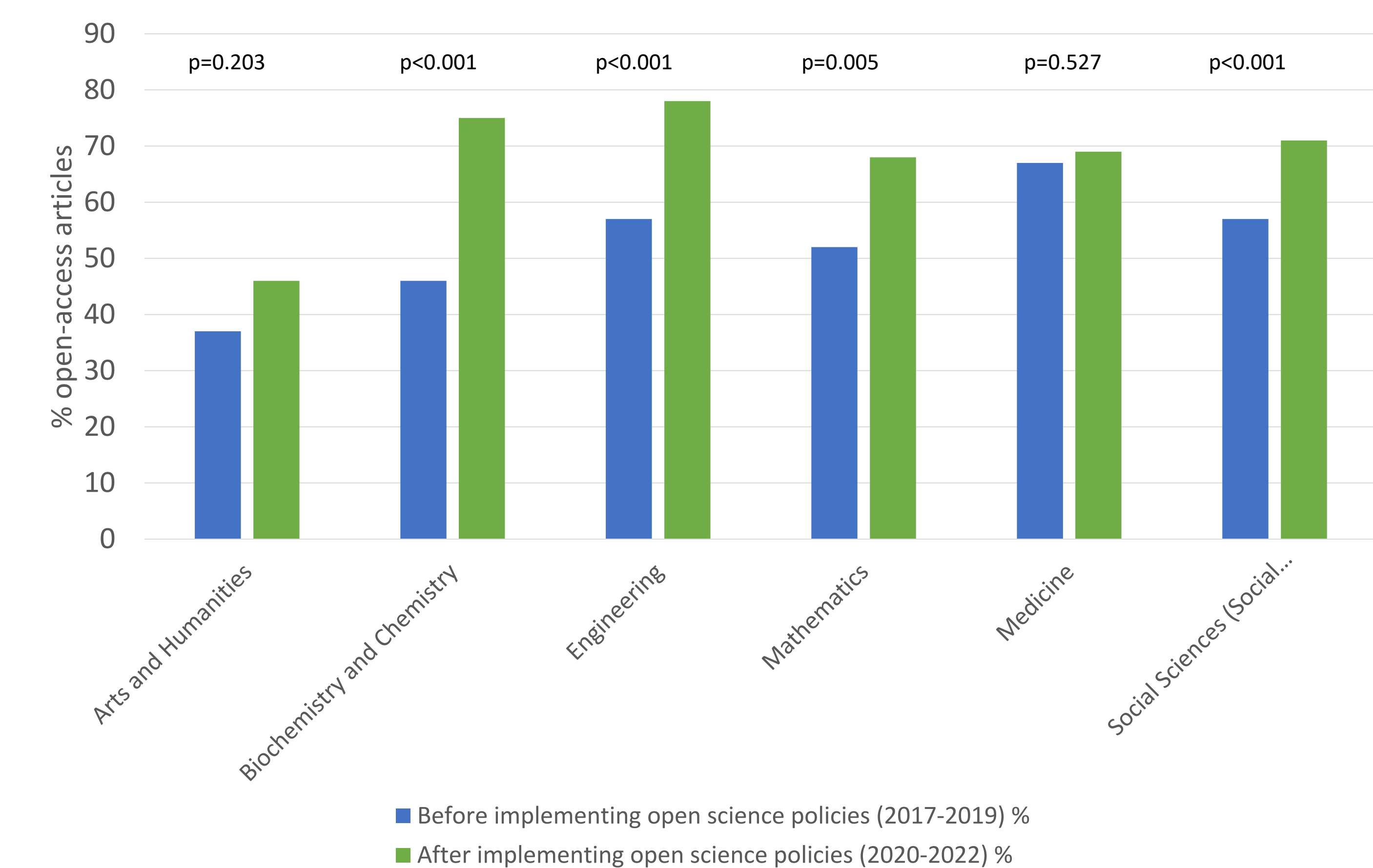


Figure 3. Relative frequency of open-access articles before (2017-2019) and after (2020-2022) implementing open science policies by field

**References:**

1. University of Rijeka. Open science policy of the University of Rijeka. 2021; Available at: [https://uniri.hr/wp-content/uploads/2021/10/UNIRI-Policy-OS-EN-FINAL\\_svkrj.pdf](https://uniri.hr/wp-content/uploads/2021/10/UNIRI-Policy-OS-EN-FINAL_svkrj.pdf)
2. University of Rijeka. European Open Science Declaration. 2019; Available at: [https://svkri.uniri.hr/images/Deklaracija\\_Europska\\_otvorena\\_znanost.pdf](https://svkri.uniri.hr/images/Deklaracija_Europska_otvorena_znanost.pdf)
3. Van Noorden R. Indonesia tops open-access publishing charts. Nature. 2019 May 15. doi: 10.1038/d41586-019-01536-5. <https://www.nature.com/articles/d41586-019-01536-5>

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**Competing interests:**

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