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Trends in Open Access Publishing With a Special Emphasis on MDPI (2018-2022)

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Abstract

In 2022, MDPI became the fourth largest publisher by their total number of indexed papers and the largest by their number of indexed open access papers per year. This analysis studies the distribution of MDPI papers in Web of Science and Scopus by country and by year. Scientists from Romania and Poland preferred to publish in MDPI journals to a higher degree than those from other countries. The contribution of publications in MDPI journals reported abnormally high numbers in other former Eastern Bloc countries, while the authors from the USA and England showed moderate interest in MDPI. The share of MDPI papers by year in all countries

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increased linearly over the recent few years, but the patterns in particular countries were very different. In Germany, France, and Japan, a "saturation" was observed; the number of MDPI papers in 2022 was only slightly higher than in 2021, whereas in South Korea, Spain, and Poland, the trend reversed in 2022, that is, there were fewer MDPI papers published in 2022 than in 2021.

Keywords: Publishers; Open Access; Predatory Journals

Tendencias en la publicación en acceso abierto con especial énfasis en MDPI (2018-2022)

Marek Kosmulski

Resumen

En 2022, MDPI se convirtió en el cuarto editor más grande por el número total de sus artículos indexados y en el editor más grande por su número de artículos indexados en acceso abierto por año. Este análisis estudia la distribución de los artículos de MDPI en Web of Science y en Scopus por país y año. Los científicos de Rumania y Polonia prefirieron publicar en las revistas de MDPI en mayor grado que aquellos de otros países. La contribución de las publicaciones en las revistas de MDPI también fue anormalmente alta en los otros países del antiguo bloque del Este, mientras que los autores de Estados Unidos e Inglaterra mostraron un interés moderado en las publicaciones de MDPI. La proporción de artículos MDPI por año en todos los países aumentó linealmente en los últimos años, pero los patrones en ciertos países fueron muy diferentes. En Alemania, Francia y Japón se observó una "saturación"; el número de artículos de MDPI en 2022 fue solo ligeramente mayor que en 2021, mientras que en Corea del Sur, España y Polonia la tendencia se invirtió en 2022, es decir, se publicaron menos artículos de MDPI en 2022 que en 2021.

Palabras clave: Editores; Acceso abierto; Revistas depredadoras

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Introduction

Nowadays, MDPI denotes Multidisciplinary Digital Publishing Institute, but in the past the name of the publisher was Molecular Diversity Preservation International –the same owner, the same address and the same abbreviation remain–. MDPI publishes only open access journals, a substantial number of these is indexed by Web of Science (209) and by Scopus (157) out of the total of 459 peer-reviewed journals, and 9 conference journals –until March 2025–. The MDPI journals indexed by WoS are chiefly devoted to chemistry, environmental sciences, physics, engineering and materials science, while clinical medicine and social sciences are underrepresented. Thus, the MDPI papers substantially affected a few disciplines and in other disciplines their share is rather insignificant.

This article is an extended and updated version of an essay (Kosmulski, 2022), which was focused on Polish reality, and the present article develops a more universal approach. The predilection of Polish scientists for MDPI is not unique, and professionals worldwide have expressed their interest and concerns about the growing popularity of MDPI in their countries. As the "MDPI problem" is relatively new –the share of MDPI in the total number of papers was <1% until 2017– it was only discussed in very recent journal papers. Repiso, Merino-Arribas and Cabezas-Clavijo (2021) grieve that in 2020 Spanish scientists published more papers in the MDPI journal *Sustainability* than in any other. Actually, in 2020, as well as in 2021 and 2022, at least two of the most popular journals chosen by Spanish scientists were from MDPI. Although the analysis by Repiso, Merino-Arribas and Cabezas-Clavijo (2021) concentrates on the case of *Sustainability*, it covers many problems typical of all MDPI journals, such as publication fees and a substantial fraction of articles appearing in special issues.

Csomós and Farkas (2023) presented a map showing the shares of MDPI in the total number of articles from particular countries published in 2021. This map revealed that Poland held the second position, after Romania, in the share of MDPI papers. Other countries with substantial share were also Eastern European nations –Lithuania, Slovakia, Latvia, Croatia– and Southern European countries, including the aforementioned Spain. Petrak, Škorić and Macan (2022) report on the exponential growth in MDPI papers by Croatian authors over the period 2017-2021, both in terms of absolute number of MDPI papers and in the fraction of the total number of papers. Also, they compared Croatia with three other countries: Slovakia had an even higher fraction of MDPI papers than Croatia, while Austria and Finland had substantially lower fractions of MDPI papers than Croatia; their cross-country analysis addressed the period 2019-2021. Cernat (2024) and Nazarovets (2024) have discussed the special predilection of Romanian authors to publish in MDPI journals.

On top of a few articles centred on MDPI –or on particular MDPI journals– several papers explore the distributions of papers by publisher but without a special emphasis on MDPI. Kim and Park (2020) analyzed the contributions of the ten top publishers of that time to a few popular bibliometric indices: their number of journals, number of publications, number of citations, impact factor, eigenfactor, and article influence score; the study covered a period of five years (2014-2018). The above indicators were extensive since impact factor and others were summed over as 'all journals by Elsevier,' 'all journals by Springer,' et cetera. Not surprisingly, Elsevier and Springer, who edited more journals and articles than any other publisher, also led in all other indicators considered by the researchers; although, in terms of the number of citations, there was only a small difference between Springer and Wiley (third position in the top publishers' list).

More recently, Kim and Park (2022) surveyed the contributions of publishers to the number of publications and the number of citations as a function of time. Their study did not distinguish particular publishers, but those included were divided into five groups: Large (6 publishers, including Elsevier and Springer), Open Access (5 publishers, including MDPI), Society (4 publishers), University (4 publishers), and other publishers (1 761). Both the number of publications and the number of citations increased in absolute number in each category of publishers. However, the shares or percentages of publications and citations displayed different trends in particular publishers categories. In Large and Open Access publishers, the shares increased in time, whereas shares declined in time in Society, University, and in 1 761 other publishers.

Geographic distribution of papers in predatory journals has been studied by Macháček and Srholec (2022). The authors elaborate on how geographic location, gross domestic product (GDP) per person, and cultural and historical reasons may affect the predilection of scientists from particular countries for publication in certain category of journals.

This study presents the number of papers, and the fraction of open access (OA) papers in nine top publishers who have published over 60% of all papers indexed by WoS. These editors are summarized in *Table 1*.

Publisher	Abbreviation	The number of all journals with IF>30 (IF for 2021)
Elsevier	Elsevier	30
IEEE	IEEE	1
Lippincott Williams & Wilkins	Lippincott	2
MDPI	MDPI	0

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Oxford University Press	Oxford	2
Sage	Sage	1
Springer Nature	Springer	9
Taylor & Francis	T&F	0
Wiley	Wiley	3

Table 1. Top nine publishers in 2021 by number of papers indexed by WoS (in alphabetical order)
Source: Author's elaboration (2023)

In 2022, the top nine was similar as in 2021, except for Lippincott Williams & Wilkins, which was replaced by Frontiers Media SA. The present study was inspired by the recent success of MDPI. The structure of MDPI papers by country and by year is analyzed. The overall increase in the number of MDPI papers is not necessarily accompanied by a proportional increase in the number of MDPI papers from all countries. The following hypotheses were raised:

- the contributions of particular countries to the success of MDPI are very different
- the contributions of particular countries are very dynamic (large year-to-year differences)
- the contributions of particular disciplines of science to the success of MDPI are very different
- the structure of papers in particular MDPI journals by country is different

As opposed to the following "null hypotheses",

- the distribution of MDPI papers by country is similar as in other publishers
- the distribution of MDPI papers by country is nearly constant in time
- the distribution of MDPI papers by discipline is similar as in other publishers
- the structure of papers in particular MDPI journals by country is similar

Methodology

The Web of Science Core Collection and Scopus databases were accessed in February 2023. The results from both databases were analyzed separately; there were no attempts to merge them. All types of publications such as original articles, reviews, letters, proceedings papers, and even corrections and editorial materials were taken into account; the study was not restricted to a certain publication type.

The list of MDPI journals covered by Scopus was obtained by downloading the source list, and sorting it by publisher. The list of MDPI journals covered by WoS

was obtained by searching for the Master Journal List of MDPI. The Elsevier and Springer papers rather than all papers were used as reference in the assessment of MDPI papers shares by country and by year. In this respect, the present study differs from Petrak, Škorić and Macan (2022) and from Csomós and Farkas (2023), who used all papers as reference.

Most searches were performed in Advanced Search mode, that is, the query strings, for example "(PUBYEAR IS 2022) AND AFFIL (Romania)" in Scopus, were typed manually, but identical numbers of relevant papers are displayed by using the Limit To function, where the desired item is chosen from a clickable list. The displayed items –articles– appeared in the following source types: Journal, Conference Proceeding, Book Series and Book.

Share total is the number of papers by certain publisher divided by the number of papers in the database. Fraction OA is the number of OA papers by certain publisher divided by the number of papers by that publisher. Volume OA is the number of OA papers by certain publisher. Share OA is the number of OA papers by certain publisher divided by the number of OA papers in the database.

Presentation of results and analysis

The shares of various types of publications vary from one publisher to another. Articles are the most common type: in 2022, 87% of MDPI papers, 78% of Elsevier papers, and 75% of Springer papers were articles (WoS). Reviews are the second most-popular type of publication in MDPI, and articles and reviews together make up 98% of all MDPI papers in 2022. In other words, the contribution of papers other than articles or reviews to all MDPI papers in 2022 is only 2%. In contrast, meeting abstracts and proceeding papers are often published by Elsevier and Springer, and the contribution of papers other than articles or reviews to all papers in 2022 is 19% in Springer and 17% in Elsevier. The difference in shares of different publication types in MDPI on one hand, and in Elsevier and Springer on the other, substantially affects the results of the present study. The shares of MDPI papers are even higher –by about 15%– than shown in this paper when only articles and reviews are considered and other types of publications are ignored. The period covered in this paper overlaps with the COVID-19 pandemic, but it is rather unlikely that this condition might have affected the predilection of scientists from particular countries to publish in MDPI journals.

The shares of top publishers in the total number of publications indexed by WoS over the period 2017-2022 are illustrated in *Figure 1*.

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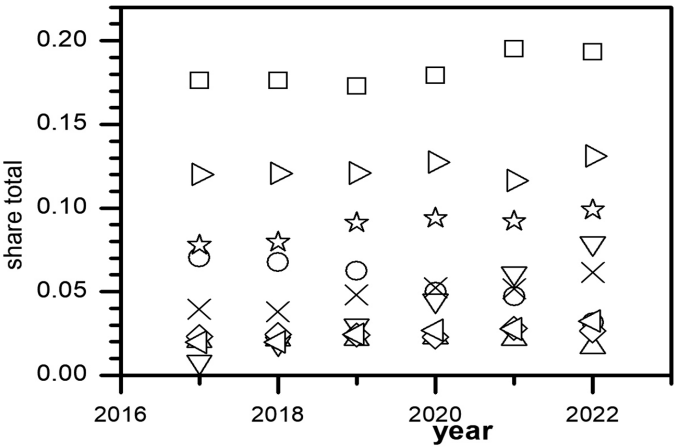
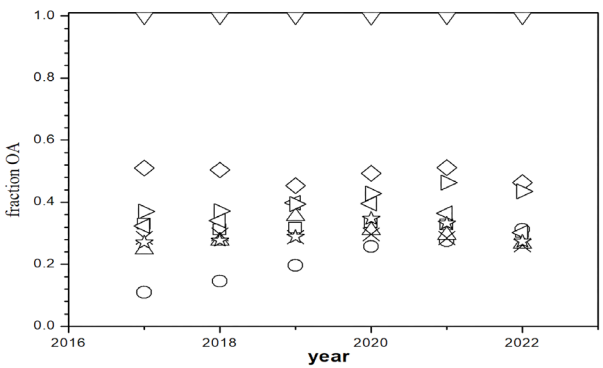


□Elsevier, ○ IEEE, △ Lippincott, ▽MDPI, ◇Oxford, ◁ Sage, ▷ Springer, ×T&F, ★Wiley
Figure 1. Shares of top publishers in the total number of publications indexed by WoS
Source: Author's elaboration (2023)

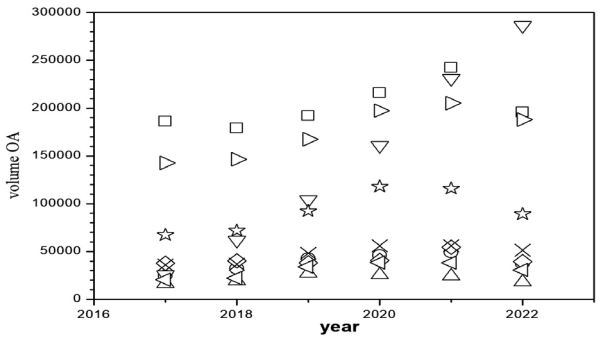
The shares of other publishers not included in *Figure 1* –in particular years– were below 3% each until 2021. In most top publishers, the share varied around a six-years average, only in IEEE the share systematically decreased and in MDPI the share systematically increased in time. Elsevier, Springer, and Wiley –in this order– are the obvious leaders, and the position sequence from the fourth on varied over time.

The fractions of OA papers in particular publishers are presented in *Figure 2*.



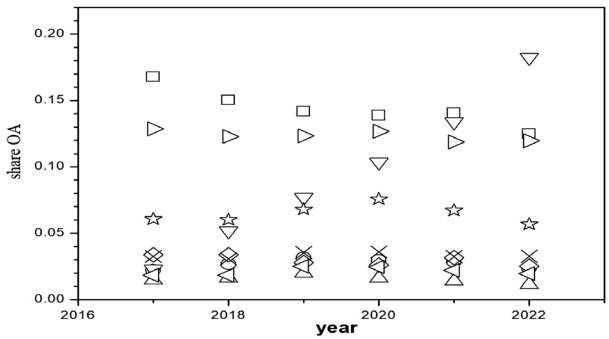
□ Elsevier, ○ IEEE, △ Lippincott, ▽ MDPI, ◇ Oxford, ◁ Sage, ▷ Springer, × T&F, ★ Wiley
Figure 2. Fractions of OA papers in top publishers (according to WoS)
Source: Author's elaboration (2023)

In most top publishers the fractions of OA papers varied around a six-years average, only in IEEE the fraction systematically increased in time. In MDPI the fraction was 100% and in Oxford it was around 49%. The other top publishers – except for IEEE– published between 26% and 41% of their papers as OA. *Figure 2* supports the statement in the introduction that the classification of publishers into top publishers in contrast to OA publishers is rather unfortunate, because the top publishers are also OA publishers (at least in 26%).



□Elsevier, ○IEEE, Δ Lippincott, ▽ MDPI, ◇Oxford, ◁ Sage, ▷ Springer, ×T&F, ✯Wiley
Figure 3. Numbers of OA papers in top publishers (according to WoS)
Source: Author's elaboration (2023)

Elsevier not only published more papers than any other publisher, but they also published more OA papers than any other editor until 2021 (*Figure 3*). In 2022, MDPI took over the lead in the number of OA papers. Interestingly enough, the volume in OA papers by top publishers other than MDPI dropped in 2022 as compared with 2021.



□ Elsevier, ○ IEEE, Δ Lippincott, ▽ MDPI, ◇ Oxford, ◁Sage, ▷Springer, × T&F, ✯ Wiley
Figure 4. Shares of OA papers in top publishers (according to WoS)
Source: Author's elaboration (2023)

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The data in *Figure 4* is the same as in *Figure 3*, but the results are normalized to the total number of papers in the database. The number of papers indexed by WoS increased by 14% between 2017 and 2021, thus the normalized data (*Figure 4*) shows different trends than the absolute values (*Figure 3*). For example, the total number of OA papers from Elsevier increased over the period 2018-2021 (*Figure 3*), but the share of Elsevier in OA papers slowly declined (*Figure 4*). Similar differences are observed in Springer and in a few other publishers.

In principle, the impact of journals is not discussed in this paper, but it is worthwhile to mention that large number of papers, as those throughout *Figure 1* and *Figure 4*, does not necessarily imply substantial impact. Among the top publishers listed in *Table 1*, Elsevier, Springer, and Wiley –in this order– are the leaders not only in the number of papers, but also in the number of top impact factor (IF) journals. In terms of high-IF journals, T&F –the top-IF-journal has an IF of 23.75– and especially MDPI –the top-IF-journal has an IF of 7.675– stand out unfavorably.

The data throughout *Figure 1* to *Figure 4* reveals a spectacular increase in the share of MDPI papers (total and OA). The present paper is focused on MDPI, while Elsevier and Springer are considered as references. In view of quick changes in the shares of MDPI in time (cf. *Figure 1*), further analysis was performed for one-year periods rather than for longer periods of time.

The distribution of the number of papers in the MDPI journals in 2021 by country (WoS) is presented in *Table 2* by the number of papers. Many were co-authored by scientists from different countries so the numbers in *Table 2* and *Table 3* do not add up to 100%, since papers with authors from different countries are counted twice or more.

Country	MDPI	Elsevier	Springer	M+E+S	M/(M+E+S)*100
China	38151	211738	87293	337182	11
USA	29536	163280	85468	278284	11
Italy	22912	31282	20887	75081	31
Spain	18035	27894	13126	59055	31
South Korea	15528	21520	9938	46986	33
Germany	15478	35824	35861	87163	18
Poland	15158	9631	5866	30655	49
England	10072	43775	26903	80750	12
Japan	8753	27127	20957	56837	15

France	8 498	33 092	16 431	58 021	15

Table 2. All MDPI, Elsevier, and Springer papers in 2021 by country (according to WoS)
Top ten countries are ordered by the number of MDPI papers
M+E+S represents the numbers of MDPI, Elsevier and Springer papers in 2021
Source: Author's elaboration (2023)

Scientists from China and USA are the top contributors to the MDPI journals by the number of papers. They also published many more Elsevier and Springer papers than scientists from any other country. However, the rest of the top ten in the number of MDPI papers is very different from the top ten in Elsevier and Springer. Italy and Spain are ahead of Germany and England in the number of MDPI papers, while in Elsevier and especially in Springer papers Germany and England are well ahead. The presence of Poland in the top ten in the number of MDPI papers is also unexpected considering moderate numbers of Elsevier and Springer papers by Polish authors.

Table 2 indicates that the contributions of particular countries to the success of MDPI are very different. *Table 3* shows similar data as *Table 2*, except the countries ordered by M/(M+E+S), where M, E, and S are the numbers of MDPI, Elsevier, and Springer papers in 2021.

Country	M	E	S	M+E+S	M/(M+E+S)*100
Romania	4 150	2 122	1 715	7 987	52
Poland	15 158	9 631	5 866	30 655	49.4
Lithuania	1 234	796	576	2 606	47.4
Slovakia	1 824	1 217	849	3 890	46.9
Latvia	470	324	243	1 037	45.3
Croatia	1 505	1 275	864	3 644	41.3
Bosnia and Herzegovina	195	146	162	503	38.8
Slovenia	1 369	1 544	906	3 819	35.8
Albania	104	114	75	293	35.5
Montenegro	76	60	81	217	35

Table 3. MDPI, Elsevier, and Springer papers in 2021 by country (according to WoS)
Top ten countries ordered by M/(M+E+S)
Source: Author's elaboration (2023)

The order of countries in *Table 3* is the same as in *Figure 2* in Csomós and Farkas (2023), although *Table 3* exposes different quantities. The figures in the last column of *Table 2* are substantially higher than M/(M+E+S) in China and USA, which are on the order of 11%. Poland is the only country in top ten both

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in the number of MDPI papers and in M/(M+E+S). Interestingly enough, all top ten countries in M/(M+E+S) share similarities in having Eastern Europe as their geographic location, in their GDP per person, and in their recent history as former socialist countries that are either EU members or candidates. Additionally, none of these countries have English as their mother tongue. Bulgaria, Czech Republic, and Hungary, with their M/(M+E+S) on the order of 30% (well above the world average), can also be characterized in a similar way as the countries from the top ten in M/(M+E+S).

The above coincidence may suggest that the preference for MDPI is due to economic or psychological reasons, such as willingness and ability to pay publication fees.

The top two countries in M/(M+E+S), Romania and Poland, were selected for further analysis. Their obtained atypical graphs are compared with the number of MDPI papers versus time graphs in four other countries. South Korea has abnormally high rates of MDPI papers (*Table 2*), but not to that high degree as Romania and Poland. In contrast, the positions of Germany, France, and Japan in MDPI papers nearly match their positions in the overall rankings (*Table 2*). The graphs in *Figure 5* are sigmoidal. Until 2016 there were very few papers from MDPI in WoS, which had a few indexed journals, thus the numbers of papers from Germany, France, South Korea, and Japan were also low, that is, below 1 500 per country per year. Between 2018 and 2020 the number of papers from MDPI from particular countries increased linearly. In 2021, the number of MDPI papers from South Korea reached a maximum, and the number of MDPI papers in 2022 dropped as compared with 2021. In 2022, the numbers of MDPI papers from three other countries were larger than in 2021, but the increase was rather insignificant as compared with the fast increase between 2018 and 2020. The trends shown in *Figure 5* for particular countries are significantly different from the overall trend (*Figure 3*); namely, the total volume of MDPI papers linearly increased over the period 2019-2022. The trend in *Figure 5* for South Korea is not unique: Spain –not included in the figure– experienced even more substantial drop in the number of MDPI papers between 2021 and 2022.

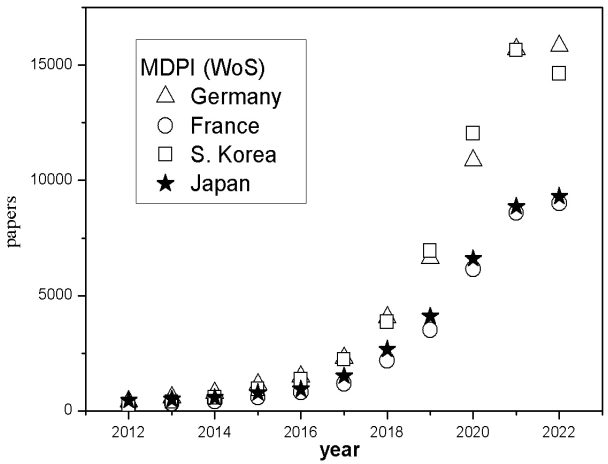

Figure 5. MDPI papers from Germany, France, South Korea, and Japan indexed in WoS (2012-2022)
Source: Author's elaboration (2023)

As the number of indexed MDPI journals varies from one database to another, analyses for Poland and Romania were performed by means of Scopus and WoS. The results are presented throughout *Figure 6* to *Figure 9*.

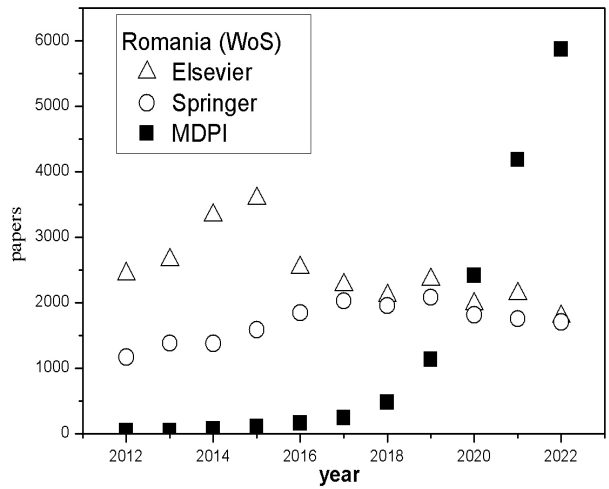

Figure 6. MDPI papers from Romania indexed in WoS (2012-2022)
Source: Author's elaboration (2023)

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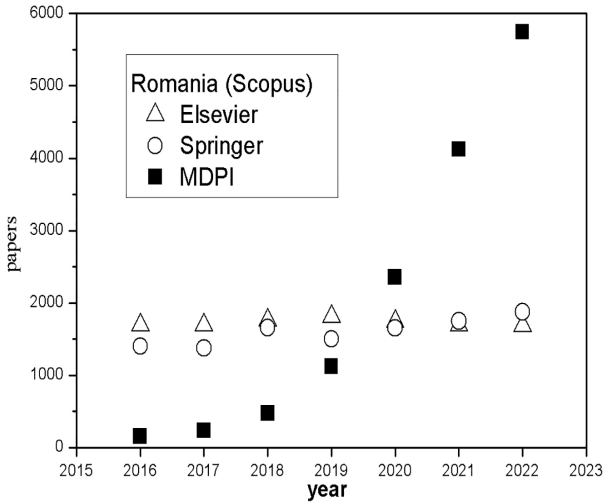

Figure 7. MDPI papers from Romania indexed in Scopus (2016-2022)
Source: Author's elaboration (2023)

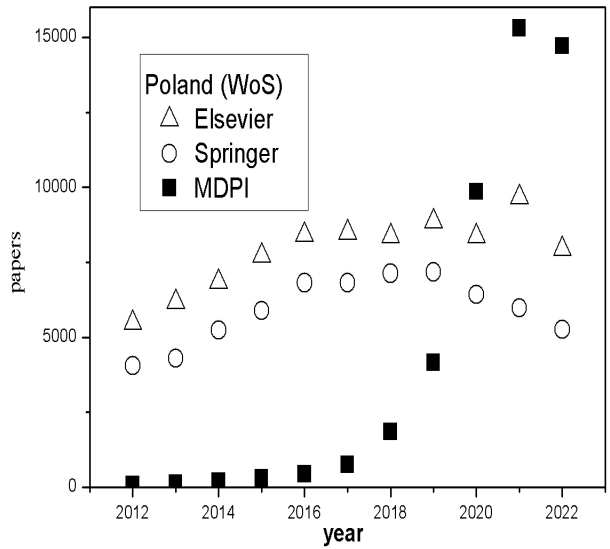

Figure 8. MDPI papers from Poland indexed in WoS (2012-2022)
Source: Author's elaboration (2023)

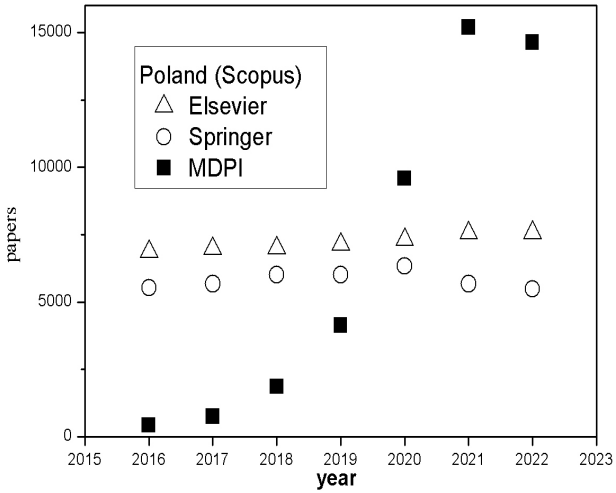

Figure 9. MDPI papers from Poland indexed in Scopus (2016-2022)
Source: Author's elaboration (2023)

The trends in MDPI papers in *Figure 6* and *Figure 7* for Romania and in *Figure 8* and *Figure 9* for Poland are independent of the databases (WoS versus Scopus). In Romania, the number of MDPI papers increased exponentially until 2021, but in 2022 the growth slowed down. In Poland, the time-dependence of the number of MDPI papers was sigmoidal. In 2021, the number of MDPI papers from Poland reached a maximum, like in South Korea. The numbers of Elsevier and Springer papers from Poland and Romania in Scopus stabilized over the period 2016-2022, while in WoS, the numbers of Springer papers from Poland and Romania reached their maximums in 2019 and then declined slightly over the period 2019-2022. Anyway, the increase in the number of MDPI papers from Poland and Romania between 2017 and 2021 was not achieved at the expense of the publications in Elsevier and Springer journals. As *Table 2*, *Table 3*, *Figure 8*, and *Figure 9* confirm, MDPI affects Polish science to a higher degree than in most other countries. Romania is affected to an even greater extent than Poland.

Discussion

The distribution of MDPI papers among particular countries is very dynamic (*Figure 5* - *Figure 9*) and any observation in this respect applies only to a certain short period. How is it possible that in spite of the decline in the number

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of MDPI papers from Poland and South Korea, who belong to the top MDPI contributors, and in moderate growth in the number of MDPI papers from Germany, France, and Japan, who also belong to the top MDPI contributors (*Table 2*), the overall volume of MDPI papers can still increase linearly (*Figure 3)*? The answer is that scientists from other countries filled the gap. For example, the number of MDPI papers from China increased by a factor of 2 in 2022 as compared with 2021, and Saudi Arabia is now –2022– ahead of England and Japan in the number of MDPI papers.

The preferences for particular MDPI journals in Poland and Romania are presented in *Table 4*. The results from all years are displayed, but given the substantial increase in the number of articles per year (*Figure 6 - Figure 9*), the results for Poland and Romania are dominated by very recent publications. Only the top journals in terms of the world share are presented, and the world share of other MDPI journals was below 3%.

Journal	World	Poland	Romania
International Journal of Molecular Sciences	6.5	8.7	4.5
Sustainability	6	4.9	9.9
Sensors	4.9	3.8	3.5
International Journal of Environmental Research and Public Health	5.5	6.7	4
Molecules	4.3	6.6	4.8
Applied Sciences Basel	4.5	4.3	5.5
Energies	3.9	9.8	2.7
Materials	3.4	10.5	5.9

Table 4. Shares of papers in particular MDPI journals related to all MDPI papers (by percentage)
Source: Author's elaboration (2023)

Table 4 indicates that Polish and Romanian authors have different journal preferences: 9.9% of MDPI papers from Romania appeared in *Sustainability* (double world average), 10.5% of MDPI papers from Poland were published in *Materials* (tripled world average), and 9.8% of MDPI papers from Poland appeared in *Energies* (double world average). In contrast, the shares of Polish and Romanian papers in *Sensors* are well below the world average.

It is significant to point out that Poland was the second country after China, and well ahead of all other nations, in the number of 2021 and 2022 papers in *Materials*; and the first, well ahead of all other countries, in the number of 2021 papers; and the second after China, and well ahead of all other countries, in the number of 2022 papers in *Energies*.

The popularity of MDPI journals in Poland and Romania correlates to some degree with the popularity of particular science disciplines in these countries.

Chemistry, physics and materials science are especially popular in Poland and Romania, while clinical medicine and social sciences are not. As mentioned in the introduction, chemistry, physics and materials science are also overrepresented in MDPI journals. However, this correlation does not fully explain the special preferences of Romanian and Polish authors. *Table 5* presents fractions of papers in various disciplines published in 2021 in MDPI journals by country.

Discipline	World	Poland	Romania
Chemistry	19	60	56
Physics	16	48	46
Materials science	12	51	55
Mathematics	4	2	16

Table 5. Shares of papers in particular disciplines published in 2021 in MDPI journals (by percentages) by country related to papers from the same country by all publishers
Source: Author's elaboration (2023)

Table 5 shows that in the disciplines overrepresented in MDPI journals, the shares of MDPI papers from Romania and Poland are three to four times higher than the world average. Interestingly enough, in mathematics, the share of MDPI papers from Romania is four times higher than the world average, but the share of MDPI papers from Poland is below the world average. Apparently, Polish and Romanian chemists, physicists and materials scientists share a special inclination to publish in MDPI journals, but Polish mathematicians do not. The above considerations indicate that the enormous success of MDPI is not distributed evenly among countries or science disciplines. MDPI has been very successful in Romania and Poland (*Table 3*), but not that much in the USA or England (*Table 2*). MDPI has been very successful in chemistry and physics, but not that much in mathematics (*Table 5*). A similar imbalance is observed in the types of publications: in 2022, MDPI published 14% of all review papers, which is slightly behind Elsevier (15.7%) and well ahead of Springer (12.5%). The imbalance is even deeper when the cohort of papers is restricted by multple criteria; for example, in 2022, MDPI published 35.5% of reviews in chemistry (Elsevier 15.5%, Springer 4.3%) and 75.4% of reviews in chemistry by Polish authors (Elsevier 8.3%, Springer 2.2%). Therefore, similar studies with a selected cohort of papers –rather than all papers– may lead to very different results.

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Conclusions and recommendations

The hypotheses raised in the introduction were confirmed, for example:

- Italy, Spain, South Korea, and Poland have abnormally high numbers of papers in MDPI journals
- China and the USA, which are the leaders in the total number of papers, have relatively few papers in MDPI journals
- The fraction of MDPI papers continuously increased over the period 2018-2022 worldwide and in various countries, but in several other nations a maximum in the fraction of MDPI papers was reached in 2021

The MDPI papers substantially contribute to the total number of indexed papers and especially to the number of indexed OA papers. The extrapolation of current trends suggests that the share of MDPI papers in the total number of indexed papers and particularly in the number of indexed OA papers will also increase in the near future. MDPI is already the leader in the number of indexed OA papers per year among other publishers and is the fourth publisher with the highest total number of indexed papers. The cross-country distribution of MDPI papers is very different from those of other publishers. Eastern European scientists have a special predilection for MDPI.

The results presented in this study are valid for a short period (2021 or 2022) and they will probably change in the predictable future. Therefore, up-to-date studies in the future are much desired. Special attention should be paid to emerging publishers such as Frontiers Media SA, who will likely play a significant role hereafter.

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