

# Comparison of the High-level OA Papers by Chinese and American Scholars over the Past Decade

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**ABSTRACT:** Chinese and American scholars are at the forefront of global high-level paper publication. This study utilizes the Science Citation Index Expanded (SCI-EXPANDED) and Social Sciences Citation Index (SSCI) databases within the Journal Citation Reports (JCR) as primary data sources to conduct a comprehensive analysis of high-level papers, Highly Cited Papers (HCPs), and Open Access (OA) papers authored by Chinese and American scholars from 2013 to 2022. The results reveal a substantial surge in China's high-level papers, HCPs, and OA papers over the past decade, surpassing the corresponding publications from the United States. However, there is a noticeable scarcity of OA papers among China's high-level publications. This research can provide a valuable reference for future policy formulation.

**Keywords:** High-level papers; Open Access (OA); Highly Cited Papers (HCPs); Chinese scholars; American scholars

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## I. INTRODUCTION

Open Access (OA) refers to the free accessibility of literature on public networks and its permissible use through legal means [1]. OA publishing offers significant benefits, including increased interactivity, timely dissemination, and higher citation rates, leading to its growing global recognition and support [2]. In recent years, there has been an exponential growth in the publication of OA papers worldwide [3]. The Directory of Open Access Journals (DOAJ) is widely recognized as the most effective platform for indexing OA journals [4]. As of the end of November 2023, the DOAJ website (doaj.org) has amassed a total of 20,185 journals and 9,608,931 OA papers. However, the quality of traditional OA papers lacks stability, with only approximately 23% of journals being indexed by Scopus and merely 10% being indexed by Web of Science (JCR) [5]. Therefore, Frank et al.[6] argue that while the intention behind OA publication is noble, there exist flaws that warrant further investigation .

Various scholars have conducted extensive research to gain insight into the current state of OA paper publication. Wang et al. [7] and Huang et al.[8] provided a summary of policies and strategies for open access in Chinese journals. Building upon this research, Chinese scholars collaborated on the China OA Publishing Development Report (2022), which offers a comprehensive overview of China's open access publishing landscape [9]. Nazim and Ashar [10] investigated the utilization of open access scholarly communication in India. Boufarss and Harviainen [11] examined open access publishing in the United Arab Emirates. Ruiz-Pérez and Delgado-López-Cózar [12] conducted a survey involving 1,896 researchers affiliated with Spanish institutions to gather insights into their opinions, characteristics, and practices regarding OA. Demeter et al. [13] conducted a cross-country and cross-disciplinary analysis of the development of open access publishing from 2000 to 2019.

In recent years, China and the United States have emerged as the leading countries in terms of published papers globally, warranting comprehensive research into their current status and publishing trends in the realm of OA papers. As such, this paper utilizes data from the Web of Science (WOS) website to provide a detailed analysis of the publication status of OA papers in China and the United States over the past decade. The findings presented herein furnish foundational data and materials for future investigations into OA paper research.

## II. METHODS

This article relies on data obtained from the Web of Science website (<https://webofscience.clarivate.cn/wos/woscc/basic-search>). The search criteria included selecting "Article" and "Review Article" as document types, utilizing the Science Citation Index Expanded (SCI-EXPANDED) and Social Sciences Citation Index (SSCI) databases within the Journal Citation Reports (JCR) for the Web of

Science Index. Additionally, a comparison was made between the countries/regions of the United States and the People's Republic of China.

### III. RESULTS AND DISCUSSION

#### 3.1 International high-level journal papers by scholars from China and the United States

Over the past decade, there has been a notable increase in the number of international high-level papers published by scholars from both China and the United States, with Chinese scholars experiencing accelerated growth, as illustrated in Table 1. According to the table, Chinese scholars published 218,190 and 730,886 papers in 2013 and 2022, respectively, exhibiting a remarkable growth rate of 235.0% over the ten-year period. On the other hand, American scholars published 343,297 and 396,931 papers in 2013 and 2022, respectively. While there was some growth during this time frame, the growth rate remained relatively modest at only 15.6%. Notably, in 2022, the number of published papers experienced a decline compared to previous years. In 2013, the number of high-level papers published by Chinese scholars amounted to only 63.6% of those published by their American counterparts. However, by 2022, the number of papers published by Chinese scholars significantly surpassed that of American scholars, accounting for 184.1% of the latter. Throughout the past decade, the overall global paper count has witnessed substantial growth, with a slight decrease observed in 2022. Specifically, the number of papers in 2022 reached 2,127,579, representing a 59.9% increase from the 1,330,810 papers recorded in 2013.

**Table 1. Number of papers by scholars from China, the USA, and the world**

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Papers by Chinese scholars	218190	251957	282648	311071	346914	398929	488297	546865	635361	730886
Papers by American scholars	343297	348662	355779	367562	377123	386896	412235	432463	450004	396931
Papers from the world	1330810	1371069	1423594	1477491	1531678	1614163	1798740	1971015	2166812	2127579

#### 3.2 The Highly Cited Papers (HCPs) by Chinese and American scholars in high-level international journals

In recent years, the number of Highly Cited Papers (HCPs) in China has experienced a rapid increase, as shown in Fig. 1. The y-axis on the left side of Fig. 1 represents the number of HCPs, while the y-axis on the right side represents the ratio of HCPs in published papers. By 2020, the number of HCPs in China had surpassed that of the United States. In 2022, the number of HCPs reached 10,100, which is 4.5 times higher than the number in 2013. Furthermore, the proportion of Chinese HCP papers to global HCP papers has significantly increased from 16.2% in 2013 to 47.4% in 2022. On the other hand, the number of HCP papers in the United States has remained relatively stable at around 7,000 over the past decade, with a slight decrease observed in 2022. Specifically, in 2013, Chinese HCP papers accounted for 33.3% of American HCP papers, but this proportion rapidly rose to 155.4% in 2022.

The proportion of HCPs in published papers by Chinese scholars has also experienced a rapid increase, rising from 1.01% in 2013 to 1.48% in 2021, and it decreased to 1.38% in 2022. In recent years, the proportion of HCPs has consistently been higher than that in worldwide papers but lower than that in papers from the United States. The average proportion of HCPs in papers worldwide was 1.02% from 2013 to 2021, and it decreased to 1% in 2022. However, the proportion of HCPs by American scholars increased from 1.92% in 2013 to 1.95% in 2014, and gradually decreased to 1.64% in 2022.

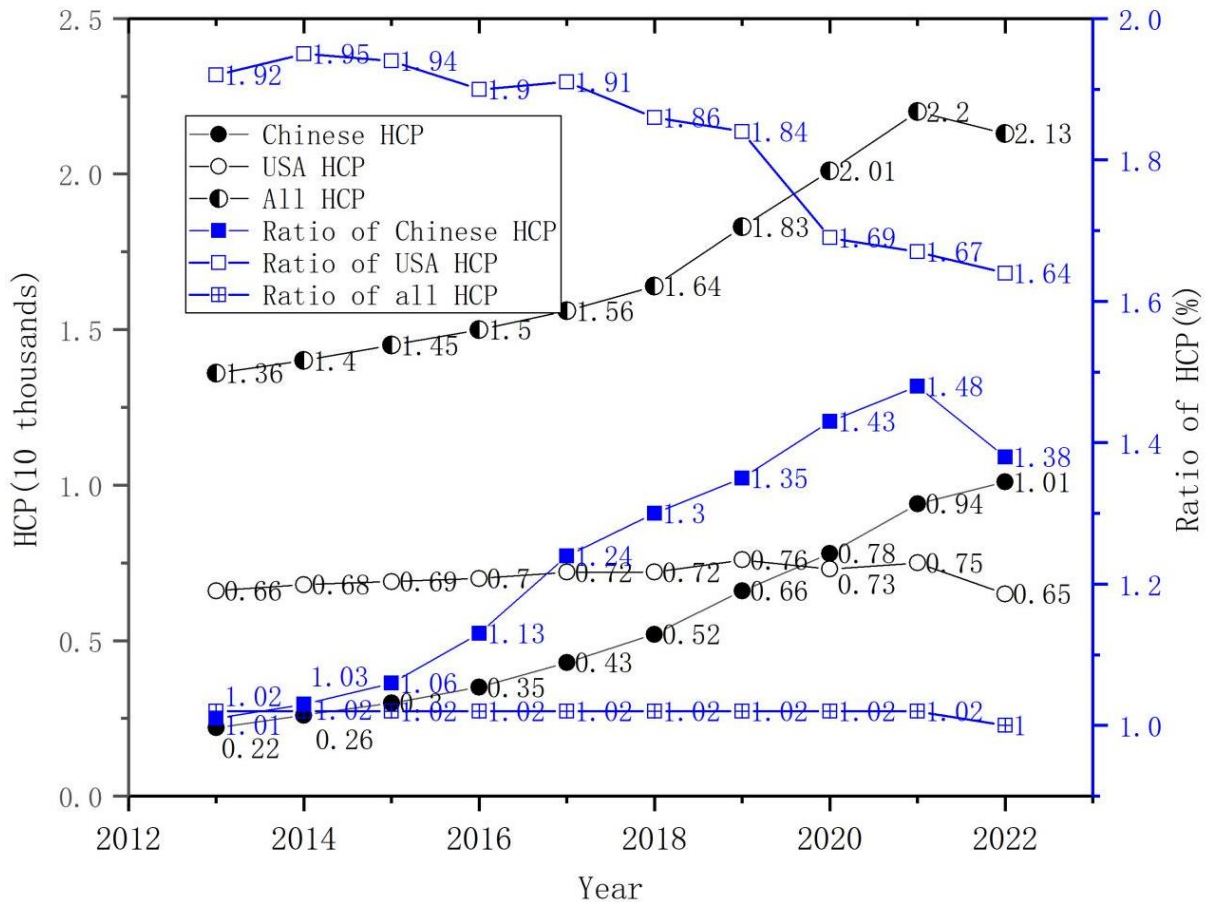


Fig. 1 The HCPs by Chinese and America scholars

### 3.3 OA papers published by Chinese and American scholars

Over the past decade, there has been a continuous increase in global OA papers and Chinese OA papers, while OA papers by American scholars have shown steady growth but experienced a decline in 2022, as illustrated in Figure 2. In 2022, the total number of OA articles worldwide, in China, and in the USA was 1.205 million, 341 thousands, and 252 thousands, respectively. These figures represent a respective increase of 2.3 times, 5.3 times, and 1.4 times compared to 2013. Notably, in 2022, the number of Chinese OA papers surpassed that of the United States, with the proportion of American OA papers increasing from 35.4% in 2013 to 135.3% in 2022, and the proportion of global OA papers rising from 12.4% in 2013 to 28.3% in 2022.

Fig. 2 presents the data on OA papers by Chinese scholars, American scholars, and the global community, along with the proportion of OA papers among high-level publications. The left y-axis depicts the number of OA papers, while the right y-axis represents the proportion of OA papers published among high-level publications. The graph reveals that in recent years, the proportion of OA papers published in high-level publications in China has progressively increased from 29.4% in 2013 to 46.6% in 2022. However, it is worth noting that this proportion remains significantly lower than both the proportion of OA papers in the United States and the proportion of global OA papers during the same period.

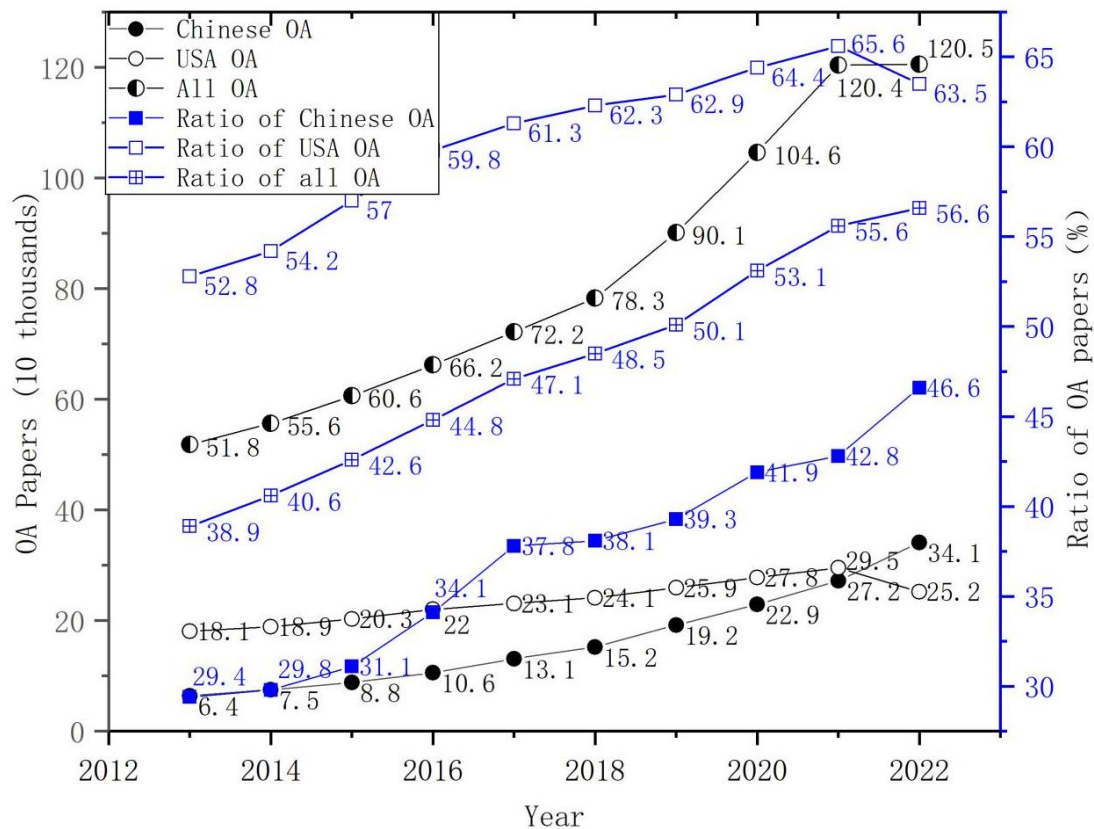


Fig. 2 OA papers published by Chinese and America scholars

3.4 OA papers by Chinese scholars across various publishers

Table 2 provides an overview of the OA papers produced by Chinese scholars in different publishers over the past decade. In 2022, the top ten publishers listed in the table have emerged as the primary disseminators of Chinese OA papers. The data highlights that Mdpi, Frontiers Media Sa, Elsevier, Springer Nature, and Wiley-Hindawi are the five publishers that have consistently published the highest number of papers by Chinese authors in recent years, with each publishing more than 20,000 OA papers in 2022. Notably, Mdpi publishers alone published a remarkable 76,510 Chinese OA papers in 2022, representing a substantial increase of 75.5 times compared to the 1,014 papers published in 2013. Additionally, both Wiley and IEEE have demonstrated significant contributions to OA publishing in China, with Wiley publishers having published over 10,000 OA papers since 2019, and IEEE publishing over 10,000 OA papers between 2019 and 2021.

Table 2. The OA papers by Chinese scholars in different publishers over the past decade

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Mdpi</b>	1014	1675	2585	4484	6760	16754	26788	28030	37050	76510
<b>Frontiers Media Sa</b>	122	231	774	1784	3488	5361	6626	13114	29173	51805
<b>Elsevier</b>	6306	7268	8456	12473	15003	17221	20607	26504	34353	36427
<b>Springer Nature</b>	8175	10818	13687	17272	18227	18527	22551	26212	28539	29370
<b>Hindawi Publishing Group</b>	4814	6495	5589	5102	4728	6307	6821	10749	14672	21705
<b>Wiley</b>	3081	3579	4492	5176	6581	8723	14614	15474	14550	14845
<b>IEEE</b>	750	963	1297	2112	3799	7194	13844	14559	11216	8385
<b>NATURE PORTFOLIO</b>	109	281	854	1540	1805	1075	1265	2046	4722	7762
<b>Wiley-Hindawi</b>	32	50	74	148	630	1486	1381	3048	4991	6657
<b>Taylor &amp; Francis</b>	692	1063	1385	2365	2600	3222	5583	5646	6236	6182

Fig. 3 illustrates the distribution of Chinese authors across different publishers. The graph reveals a consistent upward trend in the proportion of Chinese-authored OA papers published by various publishers, with only a few exceptions. Notably, Hindawi Publishing Group and Wiley Hindawi consistently exhibit higher proportions compared to other publishers. In 2022, the ratio of Chinese-authored papers published by Hindawi Publishing Group reached 74.3%, while Wiley Hindawi recorded a ratio of 69.6%.

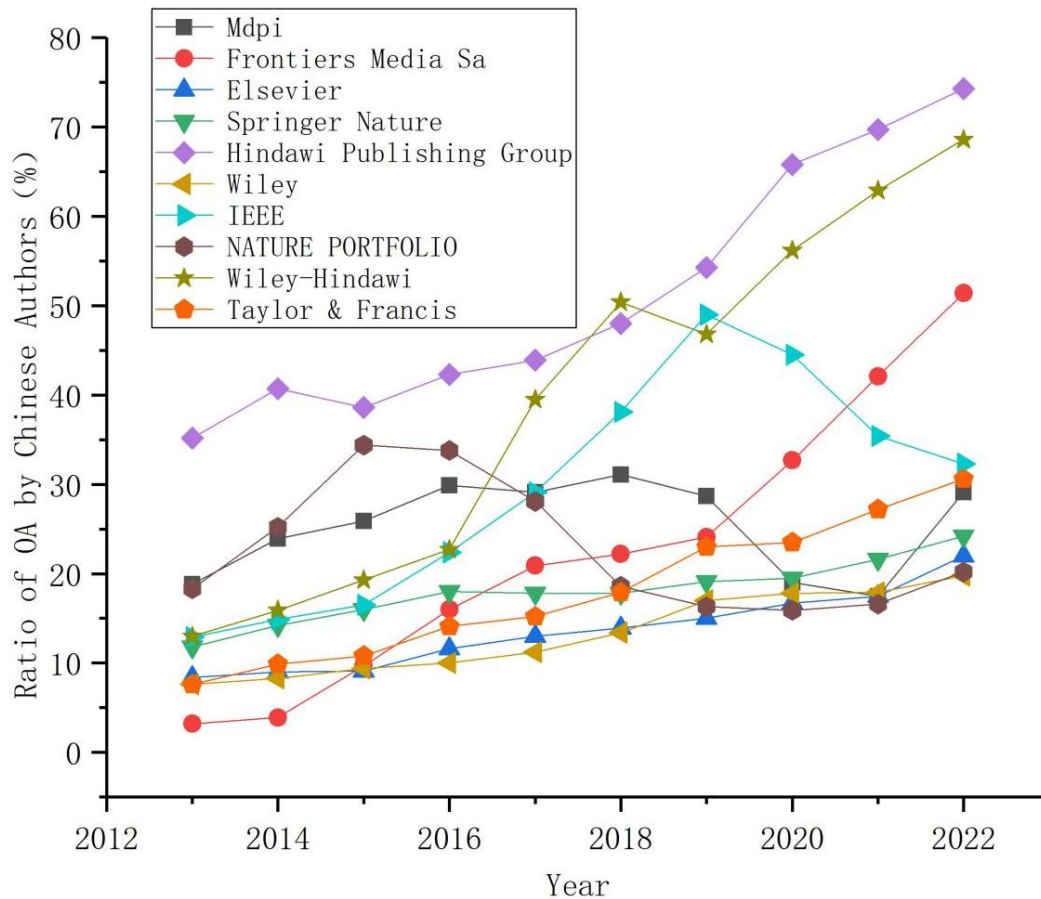


Fig. 3 The distribution of Chinese authors across different publishers

### 3.5 OA papers by American scholars across various publishers

Table 3 presents an overview of the publication of OA papers by American scholars in various publishers over the past decade. In 2022, the top ten publishers listed in the table emerged as the primary disseminators of OA papers authored by American scholars. The data reveals that Elsevier publishers consistently published over 30,000 OA papers annually in the United States, followed by Mdpi, Springer Nature, and Wiley. In 2022, all of these publishers exceeded the mark of 20,000 OA papers. It is worth noting that the order of publishers publishing the most OA papers by American scholars differs from that observed for Chinese scholars. Notably, Mdpi publishers exhibited a rapid growth rate in their publication output. In 2022, this publisher published 28,226 OA papers by American scholars, which represents a remarkable increase of 28.7 times compared to the 984 papers published in 2013.

Table 3. The OA papers by American scholars in different publishers over the past decade

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Elsevier	30719	32392	37870	43936	44690	46715	48148	52216	59913	44796
Mdpi	984	1259	1711	2696	4022	8225	12931	19643	26267	28226
Springer Nature	20801	22479	24725	27327	28739	28691	31149	32372	28092	22884
Wiley	17360	18082	18928	20054	22297	23832	28733	27206	24130	21311
Frontiers Media Sa	1366	2172	2494	3208	4647	6484	7319	9315	13859	15632

NATURE PORTFOLIO	339	560	1000	1604	2244	2308	3042	5245	10006	12525
Oxford Univ Press	9286	10296	10826	11601	11922	12132	12067	12847	16418	11281
Lippincott Williams & Wilkins	6893	6726	6783	6140	5916	6164	6848	7246	7822	6662
Public Library Science	12034	11021	10068	8256	7509	6977	6175	6556	6199	5368
Amer Chemical Soc	4693	5129	5249	5693	6502	6888	6819	7198	6724	5299

Fig. 4 illustrates the distribution of USA authors across different publishers. The graph reveals a general downward trend in the proportion of American-authored OA papers published by various publishers, with only a few exceptions. Notably, in 2003, American OA papers published by Amer Chemical Soc, Lippincott Williams&Wilkins, and NATURE PORTFOLIO accounted for over 50% of the total. However, this proportion has gradually declined over time and currently stands at approximately 40%.

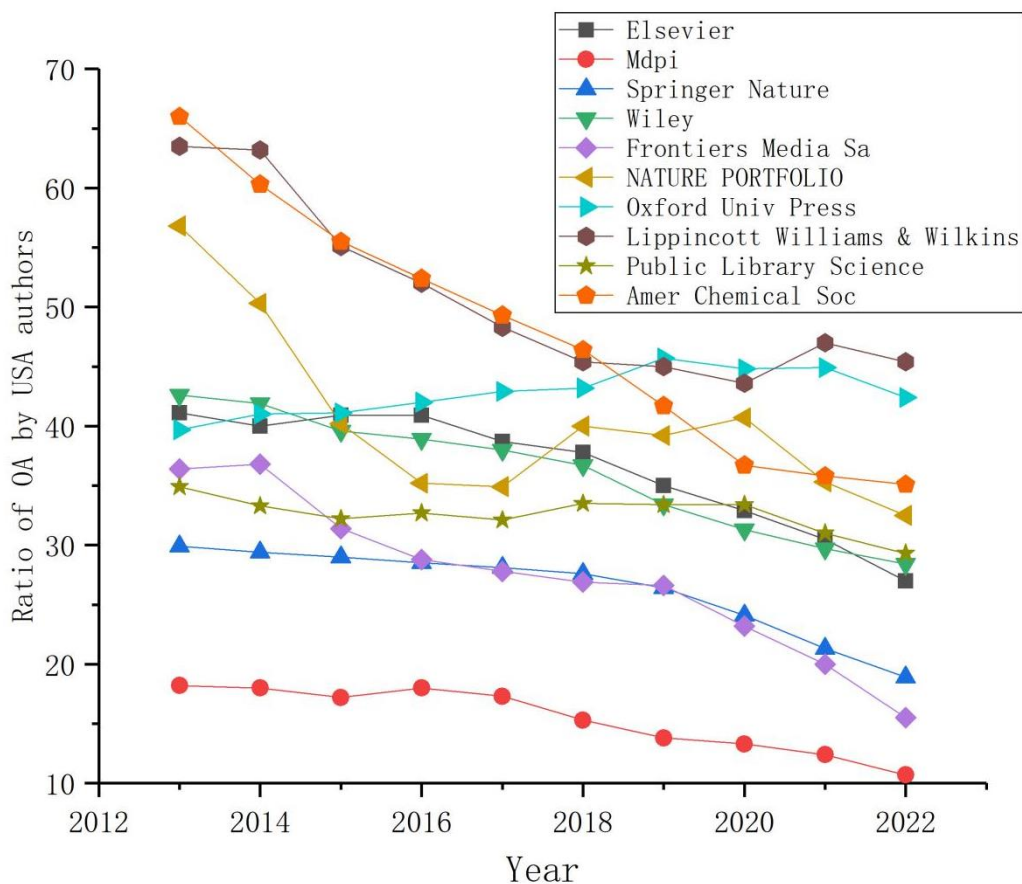


Fig. 4 The ratio of USA authors among different publishers

#### IV. CONCLUSIONS

A detailed comparison was conducted between the publication status of high-level papers authored by scholars from China and the United States. The findings are as follows:

The percentage of high-level papers published in China has increased significantly from 63.6% in 2013 to 184.1% in 2022, surpassing that of the United States. Over the past decade, China witnessed a surge of 235.0% in the number of high-level papers, while the United States experienced a modest growth of 15.6%, and the

global figure rose by 59.9%. It is noteworthy that China's publication of high-level papers has outpaced both the United States and the global average.

The number of HCP in China has shown a rapid rise, from 33.3% in 2013 to 155.4% in 2022, compared to the United States. Globally, the proportion of HCP papers increased from 16.2% in 2013 to 47.4% in 2022. In the past decade, the number of HCP papers in the United States has remained steady, hovering around 7000, with a slight decline observed in 2022.

In recent years, the proportion of OA papers among high-level publications in China has continued to grow, reaching 46.6% in 2022, up from 29.4% in 2013. However, this proportion remains lower than that of OA papers in the United States, as well as the global average during the same period.

Mdpi, Frontiers Media Sa, Elsevier, Springer Nature, and Wiley Hindawi are among the top five publishers in China, having published over 20,000 OA papers in 2022. With only a few exceptions, the proportion of Chinese OA papers published by these publishers has been increasing annually.

Elsevier has consistently published over 30,000 OA papers annually in the United States, followed by Mdpi, Springer Nature, and Wiley. In 2022, all of these publishers surpassed the mark of 20,000 OA papers. However, the proportion of US OA papers published by various publishers has been declining year by year, with only a few exceptions.

## REFERENCES

- [1]. Institute, O. S. [2004] "Budapest open access initiative" *Historical Social Research*, Vol.29, Issue 3: pp. 225-227.
- [2]. Çaldağ, M.T., and Gökalp, E. [2023] "Understanding barriers affecting the adoption and usage of open access data in the context of organizations" *Data and Information Management*, 100049. doi:10.1016/j.dim.2023.100049.
- [3]. Dumitru, M. [2023] "The relevance of bibliometric indicators and academic criteria in economics" *Accounting and Management Information Systems*, Vol.22, Issue 1: pp. 22-41. doi: 10.24818/jamis.2023.01002.
- [4]. Ding, Y. [2023] "Statistical analysis of DOAJ-indexed Chinese open access journals and their charging policies" *Chinese Journal of Scientific and Technical Periodicals*, Vol. 34, Issue 10: pp.1356-1363. doi: 10.11946/cjstp.202305050325.
- [5]. Cho, J. [2023] "Analysis of DOAJ-registered open access journals in Asian countries" *International Journal of Knowledge Content Development & Technology*, Vol. 13, Issue 3: pp. 31-45. doi: 10.5865/IJKCT.2023.13.3.031.
- [6]. Frank, J., Foster, R. and Pagliari, C. [2023] "Open access publishing – noble intention, flawed reality" *Social Science & Medicine*, Vol. 317, 115592. doi: 10.1016/j.socscimed.2022.115592.
- [7]. Wang, Y., Qi, X. and Wang Y. [2020] "Status quo of open access publishing of domestic and foreign journals and corresponding enlightenments" *Chinese Journal of Scientific and Technical Periodicals*, Vol. 31, Issue 7: pp. 828-835. doi: 10.11946/cjstp.201912120860.
- [8]. Huang, J., Rui, X. and Wang, F. [2023] "Monitoring of global OA journals and article processing charges in 2022 and recommendations for China" *Chinese Journal of Scientific and Technical Periodicals*, Vol.34, Issue 6: pp. 685-691. doi: 10.11946/cjstp.202305160355.
- [9]. China Association for Science and Technology, International Association of Science, Technology and Medical Publishers [2023]. "China Open Access Publishing Development Report (2022)" Beijing: Science Press.
- [10]. Nazim, M. and Ashar, M. [2023] "Factors influencing the adoption and use of open access scholarly communication among researchers in India" *Online Information Review*, Vol. 47, Issue 2: pp. 259-282. doi: 10.1108/OIR-05-2021-0265.
- [11]. Boufarss, M. and Harviainen J. T. [2021] "Librarians as gate-openers in open access publishing: A case study in the United Arab Emirates" *The Journal of Academic Librarianship*, Vol. 47, Issue 5 : 102425. doi: 10.1016/j.acalib.2021.102425.
- [12]. Ruiz-Pérez, S., and Delgado-López-Cózar, E. [2017] "Spanish researchers' opinions, attitudes and practices towards open access publishing" *El Profesional de la Información*, Vol. 26, Issue 4: pp. 722-734. doi: 10.3145/epi.2017.jul.16.
- [13]. Demeter, M., Jele, A. and Major, Z.B. [2021] "The international development of open access publishing: A comparative empirical analysis over seven world regions and nine academic disciplines" *Publishing Research Quarterly*, Vol. 37 : pp. 364-383. doi: 10.1007/s12109-021-09814-9