The Rise of Platinum Open Access Journals with Both Impact Factors and Zero Article Processing Charges

Joshua M. Pearce

Department of Electrical and Computer Engineering, Ivey School of Business, Western University, 1151 Richmond St. N., London, ON N6A 5B9, Canada; joshua.pearce@uwo.ca

Abstract: It appears that open access (OA) academic publishing is better for science because it provides frictionless access to make significant advancements in knowledge. OA also benefits individual researchers by providing the widest possible audience and concomitant increased citation rates. OA publishing rates are growing fast as increasing numbers of funders demand it and is currently dominated by gold OA (authors pay article processing charges (APCs)). Academics with limited financial resources perceive they must choose between publishing behind pay walls or using research funds for OA publishing. Worse, many new OA journals with low APCs did not have impact factors, which reduces OA selection for tenure track professors. Such unpleasant choices may be dissolving. This article provides analysis with a free and open source python script to collate all journals with impact factors with the now more than 12,000 OA journals that are truly platinum OA (neither the author nor the readers pay for the peer-reviewed work). The results found platinum OA is growing faster than both academic publishing and OA publishing. There are now over 350 platinum OA journals with impact factors over a wide variety of academic disciplines, giving most academics options for OA with no APCs.

Keywords: open access; academic scholarship; data management; knowledge; data management practices; academic publishing; open source software; free software; knowledge mobilization; tenure; open access publishing

1. Introduction

Academic publishing has been historically dominated by a handful of major publishers (Elsevier, Black & Wiley, Taylor & Francis, Springer Nature and SAGE), using subscription-based business models. Academic authors would provide content (e.g., articles, reviews, comments), peer-review, and often editing for free and then would pay to read typeset articles on an individual basis or part of a subscription often purchased by their institutional libraries. This model has two primary drawbacks. First, scientific progress is slowed by restricting access to copyrighted scientific literature behind paywalls [1,2]. This has divided scientists into those that can pay for access to the literature and those that cannot (often these are academics in the developing world) [3]. Second, the de facto monopolies set up by the handful of publishers of scientific peer-reviewed literature [4], driven by what some [5,6] termed excessive needs for profits [7,8] (e.g., Elsevier earned over 37%) [9], raised prices to the point that even the wealthy well-endowed Harvard University was challenged to pay for all of it [10].

One approach to solve this problem is the open access (OA) movement, which hopes to enable all academic literature to be freely accessible to everyone [11]. First, a handful of tiny OA publishers were derided and grouped together as ‘predatory publishers’ by representatives of the subscription-based academic publishing industry. While predatory publishers continue to try to exploit academics by charging authors publication fees with only a precursory (or no) check for quality [12], there is an unmistakable rise of legitimate OA publishing as it now makes up nearly a third of the peer-reviewed literature [13]. The
trend is clear that in the not-so-distant future [4] the peer-reviewed literature could be universally accessible to everyone [14,15] as many academics are calling for it [16]. The benefits of open access at any scale are well established in the literature and come in two main categories. First, OA publishing is a benefit to all of science as it provides a means of reviewing and accessing to relevant literature [17,18] for making significant advancements in knowledge [19,20]. Thus, OA increases both efficiency and effectiveness of science as a whole [21]. Second, from an individual academic’s point of view OA provides the pragmatic advantage of enabling the widest possible audience of their work by making it freely and easily on the Internet [4]. Most academics have eschewed greater financial wealth they could obtain in industry instead competing for prestige. The prestige is often governed by citations of their work and although contested before there is now no question that OA drives increased citation rates [22–26]. The data has become overwhelming that OA brings academics greater readership and citations, and the ethical case of OA all publicly funded research has become impossible to ignore. Poynder summarizes the academic publishing as whole: “... it is no longer rational, or even necessary, for subscription paywalls to be built between researchers and research.” [27].

Funders have begun to demand OA [28] for these reasons, particularly public funders of science [2,29]. It is hard to argue that if the public funds research, they should have to pay a second time to read it. Simultaneously, over 850 universities and research organizations, have also mandated that researchers share their work open access [28]. This in itself has caused challenges for academics, which believe they are being forced to pay exorbitant author processing fees (APCs) [30] to either OA publishers or hybrid OA publishers (conventional journals that normally publish on the subscription model but charge an APC to make the same article OA). High APC values can be particularly damaging for some disciplines that are less well funded such as the humanities and social sciences (as compared to physical and medical sciences or engineering). Although academics have the green OA model (where they self-archive by uploading preprints or accepted versions of their papers into institutional repositories [31]) this can be complex to navigate because publishers have different rules and it is time consuming. Substantial APCs, reinforce the wealth-gap in academia—where academics are literally paying to publish. Wealthier universities can for example, pay for discounts or fund APCs for OA for their faculty members [32]. Diamond or platinum OA journals, where no APC is paid for OA are few, new and unknown to most academics [33]. The advantages and disadvantages of the various journal types are summarized in Table 1.

Table 1. Advantages and disadvantages of journal types.

| Journal Type                  | Advantages                                               | Disadvantages                                                                 |
|-------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------|
| Conventional Subscription     | No cost to researchers directly                          | Paywall access slows knowledge dissemination, creates second-class academics with low access to literature |
| Green OA                      | No cost to researchers and Free reading of pre-prints    | Extra effort needed by researchers, no central repository, more difficult to track, improvements lost from review |
| Gold OA                       | Free reading of typeset articles                         | Costs money that diverts funds from research/knowledge creation              |
| Platinum OA                   | Free reading of typeset articles                         | Perceived lack of options for impact factor                                  |

Conventional publishers still have control of this situation, largely because it is perceived that they have monopoly on high impact factor journals [30,33]. Impact factor is a metric of an academic journal that is the yearly mean number of citations of articles.
published in the last two years in a given journal, as indexed by Clarivate’s Web of Science. There are several reasons that the value of using impact factors has been contested including: (i) using journal impact factors conceals the difference in article citation rates, (ii) they are determined by technicalities unrelated to the scientific quality, (iii) they are research field dependent, and (iv) they can be manipulated [34]. Despite these issues [34], impact factors are used a prestige metric for academics [35]. Academics are widely concerned [36] that because publication in high-impact factor journals is important for demonstrating expertise for grants, tenure, and promotion and many open access journals (because they are in general newer carry lower impact factor scores) that requiring open access would be onerous [30,33].

A few years ago, academics simply had no choice: they could either publish in a journal with an impact factor or publish OA. Now they can publish in an impact factor journal in the hybrid model or in a growing list of gold OA journals with impact factors, but they have to pay APCs, while diverting funds from research activities (e.g., researcher salaries, supplies, etc.). This may, however, be changing. The Directory of Open Access Journals lists over 17,300 journals that offer a means of OA and over 12,250 have no APCs [37]. Do any of these journals have impact factors? The aim of this study is to answer that question. This short note summarizes the results of using an open source python script to collate all journals with impact factors with journals that are truly platinum OA—e.g., neither the author nor the readers pay for the peer-reviewed work. The results are discussed in the context of OA academic publishing and steps needed to minimize the cost to science from the academic publishing process.

2. Materials and Methods

First, the impact factor (IF) list of 2020 provided by the Journal Citation Report (JCR), which contains over 12,000 journals was acquired [38]. The IF is calculated as:

\[
\text{IF} \ 2020 = \frac{\text{Citations in 2019} + \text{Citations in 2018}}{\text{Papers Published in 2019} + \text{Papers Published in 2018}}
\]

(1)

Similarly, the IF data for 2021 was acquired from [39]. Next, the Directory of Open Access Journal (DOAJ) data was acquired for OA journals [40]. A free and open source python script was deployed that uses Pandas [41] to take two csv files (one for IF and one for OA) and match them based off of a set of categories. It first takes in a set of data that includes journal IF categories in [38]. It then takes in a set of data from the DOAJ [40] that includes information about each journal including if it has APCs and fits a criterion for open access. The script then takes this file and filters out only the records that have no APC and are OA. Finally, it retrieves all records from the IF list that are also in the new reduced DOAJ list and writes them out to a file. The results of this file are evaluated manually to remove repeats and errors.

The python script under GNU General Public License v3.0 [42], input csv files, and the most recent update of the output.txt with new data are provided open access and at: https://osf.io/mh4bx/ (accessed on 22 January 2022).

3. Results

The results of running the script for 2020 impact factors is shown in Table A1 in the Appendix A. As can be seen in Table A1, in 2020 there was 139 peer-reviewed OA journals with impact factors above 1.69 in a wide range of fields ranging from the 24th highest impact factor of all journals in *Living Reviews of Relativity* to the highly timely journals such as *Emerging Infectious Diseases*. The results of running the script for 2021 impact factors is shown in Table A2 in the Appendix A. As can be seen by Table A2, there are now 358 platinum OA journals with impact factors.

Based on the results of Table A1, roughly 1% of impact factor journals are platinum OA in 2020. This value should be treated as conservative as the input data for 2020 only included journals IF > 1.69. As can be seen by Table A2, there are now 358 platinum OA
journals with impact factors (2.9% of the total journals tracked for IF). Of these, 188 with impact factors above 1.69. This represents an increase of 90% for platinum OA journals with IF > 1.69 in a single year. The number of double-digit impact factor platinum OA journals increased from 5 to 7 between 2020 and 2021, which is a 40% increase. Similarly, the number of platinum OA journals with IF > 2 increased from 111 to 164, which is a 47% increase. It is clear that academics are increasingly choosing to publish in platinum OA journals. It can be presumed that these journals are being preferentially selected to conserve research funds to do research, but future work is needed to verify this.

4. Discussion

The results of this analysis must be treated with care. First, the outputs of the script can have errors due to the input. So, for example, the journal Area, was listed as OA in the 2020 and 2021 data sets, but on inspection of the current author page it is now a gold OA journal. This is likely due to the common practice of gold OA journals operating with zero APC in the beginning to become established. This normally continues until they gain an IF at which time either APC waivers are eliminated or markedly reduced or APCs are instituted. This could be the case for other journals in this analysis being mischaracterized as platinum OA as well. Authors aiming to publish in platinum OA journals should check the validity of the data in the DOAJ carefully themselves when selecting journals. Despite this caveat, there appears to be a clear trend of an increasing IF for platinum OA and their overall numbers and these trends are more rapid than the increase in publications overall (~4%/year [43]) and of the transition to OA (35% searchable by DOAJ [44]) as a whole.

Currently with platinum OA journals with impact factors making up only about 3% of platinum OA journals, they do not currently represent a major threat to conventional subscription or pure gold OA publishers. If growth rates of >40–90% continue in the IF of existing platinum OA and of the number of platinum OA, this may change rapidly. The conflict between subscription + green OA, hybrid OA and gold OA (APCs) is not yet resolved [45]. Platinum OA journals do not necessarily have the same negative incentives that for-profit journals have to drive up sales. It should be noted that many of the platinum OA journals in Tables A1 and A2 are published by for-profit academic publishers that are subsidized by either non-profit entities or governments. Thus, the profit incentive still exists as do concerns about the consequences of it.

In some ways, the profit seeking of academic publishers, previously visible only to university librarians negotiating subscription contracts, has become more visible to all academics. Furthermore, the often-shocking APC charges (e.g., Nature Communications charges US$5,790 per article) [46], recent profit-maximizing practices include: (1) conventional publishers rejecting articles at subscription journals while offering convenient ‘transfer services’ to ‘companion’ journals that charge APCs, (2) OA publishers that offer APC discounts, similarly rejecting papers to cancel waivers, while encouraging resubmission and (3) accepting lower quality papers using any OA business model to drive up APC profit. Such practices will likely continue to disappoint academics and accelerate their selection of platinum OA now that the results of this analysis show there are platinum OA with IFs. This again will likely put economic pressure on the current business models of scientific publishers. Such pressure is similar to the illegal ‘black OA’ offered by Sci-Hub [47]. Widespread platinum OA would provide a legal means to provide the same level of access to the peer-reviewed literature, but far more must be carried out to make scholars aware of it [48].

For this to occur there remains some technical hurdles. Although writing, reviewing and content editing are generally provided by academics as part of their service to the scientific community, academic publishers still provide publishing services such as electronic architecture for the journals, archiving, copy editing and type setting. The first two of these services has been developed as free and open source software by the Public Knowledge Project in the Open Journal Systems (OJS) [49] and the ubiquitous low-cost internet archiving available that enable open access repositories [50]. Over 25,000 journals already use
OJS worldwide [49]. Some journals, both subscription and OA, use templates to assist in type setting such as MDPI or the IEEE, which provided both Word and LaTeX templates. How these templates are used differs by journal and publisher. For example, MDPI, a gold OA publisher, normally copy edits templated articles and fixes author mistakes, while at least for some IEEE publications (which are normally subscription based although some gold OA) only add a copyright notice to templated articles before publication. For the costs of publishing to be reduced for all OA models an easy-to-use method for authors is needed to make typeset articles. Templates can be effective, but can also be ‘broken’ by authors, and markup of various kinds is harder to use than WYSIWYG editors such as Libre Office or Word. LaTeX, for example, normally demands a steep learning curve, but Overleaf, which is an open-source online real-time collaborative LaTeX editor [51], may offer a solution although more work is still needed to make it seamless for authors. There is an opportunity to do this with artificial intelligence (AI). Although many academics are good writers, copy editing remains an important service provided by academic publishers [52]. Efforts to provide copy editing using AI is already underway (e.g., Wordvice AI [53], Katalyst Tech. [54], or AuthorONE from Enago [55]) and may represent the last technical hurdle in a completely open source and zero cost method (ignoring the current free services provided by the academic community itself for writing, editing and reviewing manuscripts) of providing universal platinum OA to new articles. Finally, to automate the collection of legal preprints open source programs are needed to provide that same level of access to all pat work [56].

5. Conclusions

The results of this analysis show currently platinum OA journals with impact factors represent roughly 3% of all platinum OA journals. For many academics, this fact alone may be surprising as historically there were no OA journals with impact factors and more recently all of the OA that did have impact factors came only with large APCs. This resolves one of the major equity issues in academia (i.e., wealthy academics could afford APCs to enable their work to be read by others and still publish in journals with impact factors for tenure, while less well-endowed researchers were not able to share their work as readily or had to give up the prestige of publishing in IF journals). Now, faculty no longer need to choose between two sub-optimal situations, they can share their work with everyone and still publish in journals with IFs.

The results also show that platinum OA journals with impact factors are growing both in number and impact factor values faster than both academic publishing as a whole and the extremely fast growth in OA publishing. Specifically, in a single year the platinum OA journals with IF > 1.69 increased 90%, the number of platinum OA journals with IF > 2 increased 47%, and the number of double-digit impact factor platinum OA journals increased by 40%. This means that over time most of the literature can be expected to be OA as has been hypothesized by several researchers previously, but also that much of the OA literature will continue to shift to platinum OA. Based on the limited data set here it appears that in the foreseeable future these trends will continue. The growth in OA is being fueled by what is in the best interest of both authors and readers and the growth in platinum OA is being fueled by the limited resources of the authors. Both of these trends benefit knowledge sharing because platinum OA journals provide literature to the entire public for free without directly reducing researcher funds (and thus hampering research in other areas). This would be expected to increase the rate of discovery and thus help accelerate scientific progress in general. In addition, this growth in IF platinum OA journals can be viewed as positive for knowledge quality because although the value of impact factors are contested, they still provide some litmus test that the quality of the literature is being preserved if other academics find it useful enough to cite.

With there being a relatively broad selection of platinum OA journals to select from and the last remaining major barrier to their use (having an impact factor and thus being useful for the tenure and promotion process) being removed many more academics will be
able to move to OA, particularly those from non-wealthy labs. It can thus be concluded, that conventional subscription, hybrid and new OA-pure academic publishers will need to adapt their business models to compete with this disruptive innovation of platinum OA with IF, while still maintaining sustainability. Substantial future work is available in this area for academic publishers to adapt and flourish just as other sectors have needed to adapt when open source methodologies became common (e.g., with free and open source software now making up a major portion of the software industry).

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**Appendix A**

Table A1 shows the platinum open access journals with impact factors >1.69 in 2020 and can be found at [https://osf.io/mh4bx/](https://osf.io/mh4bx/) (accessed on 22 January 2022) and Table A2 provides platinum open access journals with impact factors in 2021.

**Table A1.** Platinum open access journals with impact factors > 1.69 in 2020.

| Journal Name                                              | Impact Factor |
|-----------------------------------------------------------|---------------|
| Living Reviews In Relativity                              | 35.429        |
| Living Reviews In Solar Physics                           | 20.000        |
| Journal Of Statistical Software                           | 13.642        |
| Nano-Micro Letters                                        | 12.264        |
| Protein & Cell                                            | 10.164        |
| Chemical Science                                          | 9.346         |
| Earth System Science Data                                 | 9.197         |
| Studies In Mycology                                       | 9.027         |
| Environmental Health Perspectives                         | 8.382         |
| Journal Of Stroke                                         | 7.470         |
| Acta Pharmaceutica Sinica B                               | 7.097         |
| Eurosurveillance                                          | 6.454         |
| Green Energy & Environment                                | 6.395         |
| Emerging Infectious Diseases                              | 6.259         |
| European Respiratory Review                               | 6.220         |
| Journal Of Innovation & Knowledge                         | 6.027         |
| Journal Of High Energy Physics                            | 5.875         |
| Journal Of Materiomics                                    | 5.797         |
| Journal Of Biomedical Science                             | 5.762         |
| Rheumatology                                              | 5.606         |
| Virus Evolution                                           | 5.549         |
| Journal Of Ginseng Research                               | 5.487         |
| Journal Of Physiotherapy                                  | 5.440         |
| Digital Communications And Networks                       | 5.382         |
| Journal Of Computer-Mediated Communication                | 5.366         |
| Friction                                                  | 5.290         |
| Journal Of Sport And Health Science                       | 5.200         |
| SciPost Physics                                           | 5.051         |
| European Journal Of Psychology Applied To Legal Context   | 4.905         |
| Regenerative Biomaterials                                 | 4.882         |
| Journal Name | Impact Factor |
|--------------|---------------|
| Allergology International | 4.806 |
| Journal Of Food And Drug Analysis | 4.727 |
| Geochemical Perspectives Letters | 4.452 |
| Physics Letters B | 4.384 |
| Geoscience Frontiers | 4.202 |
| Hellenic Journal Of Cardiology | 4.047 |
| Psychosocial Intervention | 4.026 |
| Journal Of Orthopaedic Translation | 3.986 |
| Asian Journal Of Pharmaceutical Sciences | 3.968 |
| International Journal Of Mining Science And Technology | 3.903 |
| International Journal Of Health Policy And Management | 3.821 |
| International Soil And Water Conservation Research | 3.770 |
| Biomedical Journal | 3.697 |
| Journal Of Competitiveness | 3.649 |
| Perspectives In Ecology And Conservation | 3.563 |
| Cultural Anthropology | 3.554 |
| Bioimpacts | 3.475 |
| Crop Journal | 3.395 |
| Comunicar | 3.375 |
| Health Technology Assessment | 3.370 |
| Journal Of Gynecologic Oncology | 3.304 |
| Endocrinology And Metabolism | 3.257 |
| Rice Science | 3.162 |
| Csee Journal Of Power And Energy Systems | 3.115 |
| Journal Of Modern Power Systems And Clean Energy | 3.090 |
| Burns & Trauma | 3.088 |
| Express Polymer Letters | 3.083 |
| International Journal Of Educational Technology In Higher Education | 3.080 |
| Ultrasonography | 3.075 |
| Acta Orthopaedica | 2.965 |
| Financial Innovation | 2.964 |
| Matter And Radiation At Extremes | 2.931 |
| Nano Convergence | 2.919 |
| Journal Of Advanced Ceramics | 2.889 |
| Petroleum Exploration And Development | 2.845 |
| Oeno One | 2.831 |
| Journal Of Rock Mechanics And Geotechnical Engineering | 2.829 |
| Nuclear Physics B | 2.817 |
| Nucleus | 2.792 |
| Pulmonology | 2.778 |
| Journal Of Orthopaedics And Traumatology | 2.767 |
| Efsa Journal | 2.740 |
| Perioperative Medicine | 2.740 |
| Forest Ecosystems | 2.696 |
| Journal Of Pharmaceutical Analysis | 2.673 |
| Zoological Research | 2.638 |
| Defence Technology | 2.637 |
| Beilstein Journal Of Organic Chemistry | 2.622 |
| Area | 2.617 |
| Beilstein Journal Of Nanotechnology | 2.612 |
| International Journal Of Interactive Multimedia And Artificial Intelligence | 2.561 |
| Computational Linguistics | 2.510 |
| Croatian Journal Of Forest Engineering | 2.500 |
| Southern African Journal Of Hiv Medicine | 2.500 |
Table A1. Cont.

| Journal Name                                                                 | Impact Factor |
|------------------------------------------------------------------------------|---------------|
| Moravian Geographical Reports                                                | 2.479         |
| Food Science And Human Wellness                                             | 2.455         |
| Electronics                                                                  | 2.412         |
| Johnson Matthey Technology Review                                           | 2.349         |
| International Review Of Social Psychology                                   | 2.326         |
| Kona Powder And Particle Journal                                            | 2.326         |
| Military Medical Research                                                    | 2.325         |
| International Review Of Research In Open And Distributed Learning           | 2.297         |
| Bulletin Of Mathematical Sciences                                           | 2.241         |
| Eye And Vision                                                               | 2.241         |
| Molecular Vision                                                             | 2.202         |
| Oceanologia                                                                  | 2.198         |
| Journal Of The European Mathematical Society                                 | 2.190         |
| Integrative Medicine Research                                                | 2.172         |
| Judgment And Decision Making                                                | 2.163         |
| Borsa Istanbul Review                                                        | 2.130         |
| Rivista Italiana Di Paleontologia E Stratigrafia                            | 2.125         |
| Food Technology And Biotechnology                                            | 2.115         |
| Biochemia Medica                                                             | 2.114         |
| International Journal Of Implant Dentistry                                   | 2.111         |
| Petroleum Science                                                            | 2.096         |
| Mycosphere                                                                   | 2.092         |
| Educational Technology & Society                                             | 2.086         |
| Photonic Sensors                                                             | 2.073         |
| International Journal Of Disaster Risk Science                               | 2.048         |
| Journal Of The Medical Library Association                                   | 2.042         |
| Journal Of Hydrology And Hydromechanics                                     | 2.011         |
| Revista Portuguesa De Pneumologia                                           | 1.973         |
| Australasian Journal Of Educational Technology                               | 1.956         |
| Upsala Journal Of Medical Sciences                                          | 1.955         |
| Safety And Health At Work                                                    | 1.945         |
| Asian Pacific Journal Of Tropical Medicine                                  | 1.940         |
| Asian Pacific Journal Of Tropical Biomedicine                                | 1.903         |
| Jornal Brasileiro De Pneumologia                                            | 1.870         |
| South African Journal Of Science                                            | 1.866         |
| Plant Diversity                                                              | 1.864         |
| Journal Of Taibah University For Science                                    | 1.863         |
| Nuclear Engineering And Technology                                          | 1.846         |
| Electronic Journal Of Qualitative Theory Of Differential Equations          | 1.827         |
| Chinese Journal Of Mechanical Engineering                                   | 1.824         |
| Progress In Orthodontics                                                     | 1.822         |
| Swiss Medical Weekly                                                         | 1.822         |
| Public Policy And Administration                                            | 1.811         |
| Revista Brasileira De Reumatologia                                          | 1.810         |
| Journal Of Applied Oral Science                                             | 1.797         |
| International Neuurology Journal                                            | 1.794         |
| Pediatrics And Neonatology                                                  | 1.773         |
| Investigative And Clinical Urology                                           | 1.750         |
| Neotropical Ichthyology                                                     | 1.741         |
| International Journal Of Speleology                                         | 1.730         |
| Journal Of Hydroinformatics                                                  | 1.728         |
| Journal Of Legal Analysis                                                    | 1.727         |
| Journal Of Causal Inference                                                 | 1.720         |
| Mediterranean Marine Science                                                | 1.709         |
| Archives Of Control Sciences                                                | 1.697         |
Table A2. Platinum open access journals with impact factors in 2021.

| Journal Title                                                        | 2021 Impact Factor |
|---------------------------------------------------------------------|---------------------|
| Living Reviews In Relativity                                        | 40.429              |
| Living Reviews In Solar Physics                                     | 17.417              |
| Nano-Micro Letters                                                  | 16.419              |
| Studies In Mycology                                                  | 16.097              |
| Protein & Cell                                                      | 14.870              |
| Acta Pharmaceutica Sinica B                                         | 11.413              |
| Earth System Science Data                                           | 11.333              |
| Chemical Science                                                    | 9.825               |
| Journal Of Innovation & Knowledge                                   | 9.269               |
| Environmental Health Perspectives                                   | 9.031               |
| European Respiratory Review                                         | 8.839               |
| Nano Convergence                                                    | 8.526               |
| Journal Of Biomedical Science                                       | 8.410               |
| Green Energy & Environment                                          | 8.207               |
| Virus Evolution                                                     | 7.989               |
| Rheumatology                                                        | 7.580               |
| Journal Of Sport And Health Science                                 | 7.179               |
| Journal Of Physiotherapy                                            | 7.000               |
| Journal Of Stroke                                                   | 6.967               |
| Emerging Infectious Diseases                                        | 6.883               |
| Geoscience Frontiers                                                | 6.853               |
| Digital Communications And Networks                                 | 6.797               |
| Journal Of Advanced Ceramics                                        | 6.707               |
| Asian Journal Of Pharmaceutical Sciences                            | 6.598               |
| Journal Of Statistical Software                                     | 6.440               |
| Journal Of Materiomics                                              | 6.425               |
| Regenerative Biomaterials                                           | 6.353               |
| Eurosveillance                                                      | 6.307               |
| Friction                                                            | 6.167               |
| SciPost Physics                                                     | 6.093               |
| Journal Of Food And Drug Analysis                                  | 6.079               |
| Journal Of Ginseng Research                                         | 6.060               |
| International Soil And Water Conservation Research                  | 6.027               |
| Comunicar                                                           | 6.013               |
| Allergology International                                           | 5.836               |
| Journal Of High Energy Physics                                      | 5.810               |
| Geochemical Perspectives Letters                                   | 5.567               |
| Journal Of Computer-Mediated Communication                         | 5.410               |
| Journal Of Orthopaedic Translation                                 | 5.191               |
| Egyptian Journal Of Remote Sensing And Space Sciences               | 5.188               |
| Food Science And Human Wellness                                    | 5.154               |
| Burns & Trauma                                                      | 5.099               |
| Japanese Dental Science Review                                      | 5.093               |
| Psychosocial Intervention                                           | 5.083               |
| International Journal Of Health Policy And Management               | 5.007               |
| Sustainable Environment Research                                    | 4.980               |
| Biomedical Journal                                                 | 4.910               |
| Physics Letters B                                                   | 4.771               |
| Journal Of Pharmaceutical Analysis                                 | 4.769               |
| Journal Of Competitiveness                                         | 4.725               |
| Perspectives In Ecology And Conservation                            | 4.677               |
| Bioresources And Bioprocessing                                     | 4.578               |
| Zoological Research                                                | 4.560               |
| Crop Journal                                                       | 4.407               |
| Journal Of Gynecologic Oncology                                     | 4.401               |
Table A2. Cont.

| Journal Title                                                      | 2021 Impact Factor |
|-------------------------------------------------------------------|--------------------|
| Ict Express                                                       | 4.317              |
| Geo-Spatial Information Science                                   | 4.288              |
| Mycosphere                                                        | 4.211              |
| Nucleus                                                           | 4.197              |
| Express Polymer Letters                                           | 4.161              |
| Petroleum Science                                                 | 4.090              |
| International Journal Of Mining Science And Technology            | 4.084              |
| Health Technology Assessment                                      | 4.014              |
| Endocrinology And Metabolism                                      | 4.010              |
| Financial Innovation                                              | 3.985              |
| Csee Journal Of Power And Energy Systems                          | 3.938              |
| Food Technology And Biotechnology                                 | 3.918              |
| Applied Water Science                                             | 3.874              |
| Bioimpacts                                                        | 3.831              |
| Petroleum Exploration And Development                             | 3.803              |
| Propulsion And Power Research                                     | 3.738              |
| International Journal Of Disaster Risk Science                    | 3.727              |
| Acta Orthopaedica                                                 | 3.717              |
| Ultrasonography                                                   | 3.675              |
| Kidney Research And Clinical Practice                             | 3.667              |
| Beilstein Journal Of Nanotechnology                               | 3.649              |
| Forest Ecosystems                                                 | 3.645              |
| Pulmonology                                                       | 3.575              |
| Perioperative Medicine                                            | 3.535              |
| Educational Technology & Society                                  | 3.522              |
| Neurospine                                                        | 3.492              |
| Cultural Anthropology                                              | 3.439              |
| Journal Of Ocean Engineering And Science                          | 3.408              |
| Public Policy And Administration                                  | 3.386              |
| Borsa Istanbul Review                                             | 3.348              |
| Efsa Journal                                                      | 3.336              |
| Rice Science                                                      | 3.333              |
| Military Medical Research                                         | 3.329              |
| Epidemiology And Health                                           | 3.282              |
| Journal Of Modern Power Systems And Clean Energy                   | 3.265              |
| Eye And Vision                                                    | 3.257              |
| Defence Technology                                                | 3.172              |
| Research & Politics                                               | 3.141              |
| Australasian Journal Of Educational Technology                    | 3.067              |
| Studies In Second Language Learning And Teaching                  | 3.036              |
| Horticultural Plant Journal                                       | 3.032              |
| Brazilian Journal Of Psychiatry                                   | 3.000              |
| Journal Of Causal Inference                                       | 3.000              |
| Perspectives On Medical Education                                 | 2.947              |
| Johnson Matthey Technology Review                                 | 2.920              |
| Journal Of Orthopaedics And Traumatology                          | 2.907              |
| Kona Powder And Particle Journal                                  | 2.897              |
| Beilstein Journal Of Organic Chemistry                            | 2.883              |
| Ecological Processes                                              | 2.849              |
| Matter And Radiation At Extremes                                  | 2.845              |
| International Neurolourlogy Journal                               | 2.835              |
| Asia-Pacific Journal Of Ophthalmology                            | 2.827              |
| Underground Space                                                 | 2.824              |
| Survey Research Methods                                           | 2.806              |
| Journal Of Analytical Science And Technology                      | 2.769              |
| Nuclear Physics B                                                 | 2.759              |
| Journal Of Legal Analysis                                         | 2.750              |
| Progress In Orthodontics                                          | 2.750              |
### Table A2. Cont.

| Journal Title                                               | 2021 Impact Factor |
|-------------------------------------------------------------|--------------------|
| Safety And Health At Work                                   | 2.707              |
| Journal Of Applied Oral Science                             | 2.698              |
| Journal Of Electromagnetic Engineering And Science          | 2.696              |
| Journal Of Taibah University For Science                    | 2.688              |
| Journal Of Movement Disorders                               | 2.683              |
| Jornal Brasileiro De Pneumologia                            | 2.624              |
| Judgment And Decision Making                                | 2.543              |
| Plant Diversity                                             | 2.528              |
| Journal Of Hydrology And Hydromechanics                     | 2.512              |
| International Review Of Social Psychology                   | 2.500              |
| Voluntas                                                    | 2.468              |
| Photonic Sensors                                            | 2.433              |
| Oceanologia                                                  | 2.427              |
| Economica                                                   | 2.397              |
| Electronics                                                  | 2.397              |
| Mathematics In Engineering                                  | 2.385              |
| International Journal Of Implant Dentistry                  | 2.384              |
| Upsala Journal Of Medical Sciences                           | 2.384              |
| Journal Of Hydroinformatics                                 | 2.376              |
| Indian Journal Of Medical Research                          | 2.375              |
| Integrative Medicine Research                               | 2.368              |
| Molecular Vision                                             | 2.367              |
| Arthropod Systematics & Phylogeny                            | 2.354              |
| Nuclear Engineering And Technology                           | 2.341              |
| Andean Geology                                               | 2.327              |
| Mediterranean Marine Science                                | 2.319              |
| Biochemia Medica                                            | 2.313              |
| Oeno One                                                     | 2.305              |
| Prostate International                                       | 2.286              |
| Area                                                         | 2.280              |
| Computational Linguistics                                   | 2.277              |
| Moravian Geographical Reports                               | 2.250              |
| Advances In Rheumatology                                    | 2.235              |
| Hong Kong Medical Journal                                   | 2.227              |
| Annals Of Thoracic Medicine                                 | 2.219              |
| Bulletin Of Mathematical Sciences                            | 2.219              |
| South African Journal Of Science                            | 2.197              |
| Swiss Medical Weekly                                        | 2.193              |
| Investigative And Clinical Urology                          | 2.186              |
| Journal Of Curriculum Studies                               | 2.183              |
| Latin American Economic Review                              | 2.161              |
| Baltic Journal Of Economics                                 | 2.150              |
| Neotropical Ichthyology                                     | 2.091              |
| Croatian Journal Of Forest Engineering                      | 2.088              |
| Pediatrics And Neonatology                                  | 2.083              |
| Angle Orthodontist                                           | 2.079              |
| Demographic Research                                        | 2.046              |
| Folia Neupathologica                                        | 2.038              |
| Balkan Medical Journal                                      | 2.021              |
| Asia & The Pacific Policy Studies                           | 2.014              |
| Arquivos Brasileiros De Cardiologia                         | 2.000              |
| Egyptian Journal Of Biological Pest Control                 | 1.995              |
| Amfiteatru Economic                                         | 1.983              |
| Chinese Journal Of Mechanical Engineering                   | 1.936              |
| Medical Principles And Practice                             | 1.927              |
| Dermatology Practical & Conceptual                          | 1.926              |
| Water Science And Technology                                | 1.915              |
| Journal Of Water And Climate Change                         | 1.900              |
| Journal Title                                                                 | 2021 Impact Factor |
|------------------------------------------------------------------------------|--------------------|
| Anais Brasileiros De Dermatologia                                           | 1.896              |
| Geologica Carpathica                                                        | 1.875              |
| Indian Journal Of Ophthalmology                                             | 1.848              |
| Brazilian Journal Of Otorhinolaryngology                                    | 1.811              |
| Processing And Application Of Ceramics                                       | 1.804              |
| International Journal Of Communication                                      | 1.802              |
| Quantitative Economics                                                      | 1.782              |
| Avian Research                                                              | 1.774              |
| Indian Journal Of Psychiatry                                                | 1.759              |
| Rural And Remote Health                                                     | 1.759              |
| Rural And Remote Health                                                     | 1.759              |
| Vertebrate Zoology                                                          | 1.757              |
| Journal Of Water And Health                                                 | 1.744              |
| Acta Chimica Slovenica                                                      | 1.735              |
| Brodogradnja                                                                | 1.708              |
| Taiwanese Journal Of Obstetrics & Gynecology                                | 1.705              |
| Subterranean Biology                                                        | 1.690              |
| Journal Of Vector Borne Diseases                                            | 1.688              |
| Knowledge And Management Of Aquatic Ecosystems                              | 1.677              |
| Journal Of Contemporary Brachytherapy                                        | 1.656              |
| Grasas Y Aceites                                                            | 1.650              |
| Politics And Religion                                                       | 1.650              |
| California Agriculture                                                      | 1.641              |
| Physical Review Accelerators And Beams                                       | 1.639              |
| Geofizika                                                                   | 1.636              |
| Materiales De Construccion                                                  | 1.619              |
| Nordic Studies On Alcohol And Drugs                                         | 1.600              |
| Anatolian Journal Of Cardiology                                             | 1.596              |
| Endokrynologia Polska                                                       | 1.582              |
| Revista Da Sociedade Brasileira De Medicina Tropical                        | 1.581              |
| Scientia Marina                                                             | 1.576              |
| International Journal Of Speleology                                        | 1.566              |
| Journal Of Pacific Rim Psychology                                           | 1.557              |
| Nano                                                                        | 1.556              |
| Asian Pacific Journal Of Tropical Biomedicine                               | 1.545              |
| Web Ecology                                                                  | 1.545              |
| Annals Of Saudi Medicine                                                    | 1.526              |
| Annals Of Forest Research                                                   | 1.516              |
| Urology Journal                                                             | 1.510              |
| Chimia                                                                      | 1.509              |
| Norwegian Journal Of Geology                                                | 1.508              |
| Palaeontologia Electronica                                                  | 1.500              |
| Indian Journal Of Dermatology                                               | 1.494              |
| Journal Of Postgraduate Medicine                                           | 1.476              |
| Mathematical Modelling And Analysis                                         | 1.474              |
| Kinesiology                                                                 | 1.452              |
| Revista Latino-Americana De Enfermagem                                      | 1.442              |
| Interfaces                                                                  | 1.434              |
| Water Policy                                                                | 1.434              |
| Geologica Acta                                                              | 1.432              |
| Mires And Peat                                                              | 1.425              |
| Arquivos De Neuro-Psiquiatri                                                | 1.420              |
| Wildfowl                                                                    | 1.417              |
| Acta Montanistica Slovaca                                                   | 1.413              |
| Science Of Sintering                                                        | 1.412              |
| Journal Of Applied Fluid Mechanics                                          | 1.405              |
| Journal Of Nematology                                                       | 1.402              |
| Journal Title                                                                 | 2021 Impact Factor |
|-----------------------------------------------------------------------------|--------------------|
| Annals Of Indian Academy Of Neurology                                       | 1.383              |
| Agricultural And Food Science                                                | 1.375              |
| Revista Portuguesa De Cardiologia                                           | 1.374              |
| European Journal Of Taxonomy                                                | 1.372              |
| Trabajos De Prehistoria                                                     | 1.366              |
| Annals Of Geophysics                                                        | 1.362              |
| Croatian Medical Journal                                                    | 1.351              |
| Etri Journal                                                                | 1.347              |
| Journal Of Spectral Theory                                                  | 1.323              |
| Brazilian Journal Of Pharmaceutical Sciences                                 | 1.321              |
| Theoretical Economics                                                       | 1.313              |
| Brazilian Journal Of Cardiovascular Surgery                                 | 1.312              |
| Polish Polar Research                                                       | 1.308              |
| Crop Breeding And Applied Biotechnology                                      | 1.282              |
| Electronic Journal Of Differential Equations                                | 1.282              |
| Water Supply                                                                | 1.275              |
| Brazilian Journal Of Geology                                                | 1.259              |
| Forest Systems                                                              | 1.255              |
| Journal Of The Serbian Chemical Society                                     | 1.240              |
| Petrology                                                                   | 1.235              |
| World Rabbit Science                                                        | 1.233              |
| Asian Pacific Journal Of Tropical Medicine                                  | 1.226              |
| Fluoride                                                                    | 1.224              |
| Videosurgery And Other Mininvasive Techniques                                | 1.195              |
| Computer Science And Information Systems                                    | 1.167              |
| Information Technology And Libraries                                        | 1.160              |
| Metrology And Measurement Systems                                           | 1.155              |
| Arkivoc                                                                     | 1.140              |
| Psihologija                                                                 | 1.140              |
| Journal Of Universal Computer Science                                       | 1.139              |
| Algebraic Geometry                                                          | 1.132              |
| Condensed Matter Physics                                                     | 1.128              |
| Acta Amazonica                                                              | 1.126              |
| Dyna                                                                        | 1.113              |
| Mljekarstvo                                                                 | 1.111              |
| Journal Of Legal Studies                                                    | 1.108              |
| Veterinaria Italiana                                                        | 1.101              |
| Archives Of Control Sciences                                                | 1.088              |
| Mathematical Communications                                                 | 1.075              |
| Polish Journal Of Pathology                                                 | 1.072              |
| Journal Of Research Of The National Institute Of Standards And Technology    | 1.034              |
| Materials Science-Poland                                                    | 1.022              |
| Journal Of International Advanced Otology                                   | 1.017              |
| Animal Biodiversity And Conservation                                        | 1.000              |
| Fishery Bulletin                                                            | 1.000              |
| Journal Of Cytology                                                         | 1.000              |
| Sociobiology                                                                | 0.983              |
| New Medit                                                                   | 0.969              |
| Revista Brasileira De Anestesiologia                                        | 0.964              |
| Politikon                                                                   | 0.962              |
| Revista De Metalurgia                                                       | 0.959              |
| Archives Of Biological Sciences                                             | 0.956              |
| Revista De Estudios Sociales                                                | 0.953              |
| Acta Botanica Croatica                                                      | 0.943              |
| Drvna Industrija                                                            | 0.940              |
| Social Analysis                                                             | 0.933              |
| Bangladesh Journal Of Pharmacology                                          | 0.930              |
| Journal Of Theoretical And Applied Mechanics                                 | 0.927              |
| Journal Title                                      | 2021 Impact Factor |
|---------------------------------------------------|--------------------|
| Taiwania                                          | 0.925              |
| Journal Of Official Statistics                    | 0.920              |
| Hong Kong Journal Of Occupational Therapy         | 0.917              |
| Archives Of Clinical Psychiatry                    | 0.909              |
| Africa Spectrum                                   | 0.900              |
| Croatica Chemica Acta                            | 0.887              |
| Malawi Medical Journal                            | 0.875              |
| Panoeconomicus                                    | 0.852              |
| Studia Psychologica                               | 0.850              |
| Acta Herpetologica                                | 0.848              |
| Mediterranean Botany                              | 0.842              |
| Indian Journal Of Experimental Biology            | 0.818              |
| Documenta Mathematica                             | 0.815              |
| International Journal Of Psychological Research   | 0.800              |
| Journal Of Rehabilitation                        | 0.796              |
| Journal Of Apicultural Science                   | 0.788              |
| Acta Clinica Croatica                             | 0.780              |
| Earth Sciences Research Journal                   | 0.779              |
| Latin American Research Review                    | 0.779              |
| Geologica Belgica                                 | 0.773              |
| Archives Of Metallurgy And Materials              | 0.767              |
| Indian Journal Of Traditional Knowledge           | 0.757              |
| Transylvanian Review Of Administrative Sciences   | 0.742              |
| Revista Mvz Cordoba                               | 0.738              |
| Annali Di Botanica                                | 0.722              |
| Lingua                                            | 0.719              |
| Geologia Croatica                                 | 0.717              |
| Revista Mexicana De Biodiversidad                 | 0.716              |
| Discussiones Mathematicae Graph Theory            | 0.714              |
| International Journal Of Odonatology             | 0.707              |
| Electronic Journal Of Combinatorics               | 0.695              |
| Bangladesh Journal Of Plant Taxonomy              | 0.679              |
| Education As Change                               | 0.667              |
| International Journal Of Conflict And Violence    | 0.643              |
| Journal Of Southern Hemisphere Earth Systems Science | 0.629          |
| Ethics & Global Politics                          | 0.613              |
| Tropical Grasslands-Forrajes Tropicales           | 0.611              |
| Nauplius                                          | 0.610              |
| Salud Colectiva                                   | 0.597              |
| Caldasia                                          | 0.562              |
| Geodetski Vestnik                                 | 0.551              |
| Tempo Social                                      | 0.547              |
| Sociologia                                        | 0.537              |
| Movimento                                         | 0.523              |
| History Of Geo- And Space Sciences                | 0.500              |
| Historia Agraria                                  | 0.488              |
| Hong Kong Journal Of Emergency Medicine           | 0.486              |
| Magallania                                        | 0.469              |
| Botanica Serbica                                  | 0.468              |
| Culture & History Digital Journal                 | 0.463              |
| Logical Methods In Computer Science               | 0.438              |
| Applied Economic Analysis                         | 0.417              |
| Engenharia Sanitaria E Ambiental                  | 0.417              |
| Acta Bioethica                                    | 0.408              |
| Journal Of Nepal Medical Association              | 0.406              |
| Sintagma                                          | 0.400              |
| Tidsskrift For Samfunnsforskning                  | 0.394              |
| Agrociencia                                       | 0.391              |
Table A2. Cont.

| Journal Title                                      | 2021 Impact Factor |
|----------------------------------------------------|--------------------|
| Perfiles Latinoamericanos                          | 0.383              |
| Informes De La Construccion                        | 0.375              |
| Neurological Sciences And Neurophysiology          | 0.358              |
| Austrian Journal Of Political Science              | 0.346              |
| Adansonia                                          | 0.345              |
| Serbian Astronomical Journal                       | 0.333              |
| Revija Za Socijalnu Politiku                       | 0.265              |
| Internasjonal Politikk                             | 0.264              |
| Ljetopis Socijalnog Rada                           | 0.243              |
| Australasian Orthodontic Journal                   | 0.226              |
| Srpski Arhiv Za Celokupno Lekarstvo                 | 0.207              |
| Acta Histriae                                      | 0.161              |
| B-Ent                                              | 0.082              |

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