

## Latin American triple-A journals 1: A quality roadmap from the quality indicators and journals' presence in Web of Science and Scopus

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### Abstract

The current presence of Latin American journals in Web of Science and Scopus is analyzed, as the first part of a quality roadmap intended to strengthen regional publications, especially those that have started as institutional publications. The next issue will study the quality requirements and journals' presence in other recognized indexes and platforms such as Scimago Journal and Country Rank, the Directory of Open Access Journals, Latindex, SciELO, and RedALyC.

**Keywords** Web of Science, Scopus, journal citation indexes, bibliometrics, scientific production, scientific journals, quality indicators, Latin America

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*In loving memory of Cristóbal Salvador Gómez Contreras (1992–2017)*

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### Introduction

Web of Science (WoS) and Scopus are the two scientific journal citation indexes most appreciated by scientific communities and research evaluation systems worldwide. Currently, there are approximately 300,000 serials worldwide, but only about 34,585 are peer reviewed (Ware and Mabe, 2015: 27-28). From these peer-reviewed journals, Scopus indexes 22,794 journals (Elsevier, 2017b) and WoS' main three indexes (Science Citation Index Expanded [SCIE], Social Sciences Citation Index [SSCI], and Arts & Humanities Citation Index [AHC]) contain 14,498 journals (Clarivate Analytics, 2017a, 2017d).

Bibliometric indicators are used to evaluate and rank the scientific production quality and quantity of researchers, institutions, countries and disciplines. Many research evaluation, accreditation and ranking systems use such indicators to measure and evaluate research. For instance, in Mexico, the National Researchers System (Sistema Nacional de Investigadores: SNI) grants more points to peer-reviewed and indexed publications than to those not having these characteristics. Meanwhile, international accreditation agencies that evaluate educational institutions' research activities will analyze its members' bibliometric indicators as they appear in WoS and Scopus. Hence, it is vital to develop strategies to ensure the generation of such indicators, such as: publish in peer-reviewed and indexed journals; ensure the visibility, access and availability of the institutional publications – both those published by the institution (e.g. institutional journals) and by its members in

institutional and international journals – and promote publications by members of the institution to ensure the generation of bibliometric and Altmetric indicators. Only the publications that are visible and accessible to a worldwide audience will be cited and indexed; and citations are highly important, because many other bibliometric indicators are derived from citation data.

### **Journal citation indexes**

There are many indexes, the most common of which are used to extend the access to and visibility of publications, such as the databases from EBSCO and ProQuest, Latindex, Directory of Open Access Journals (DOAJ), Google Scholar and Scimago. However, there are only two commercial abstract and citation indexes that exclusively include the ‘top scientific journals’: WoS and Scopus. Hence, they are the ones exclusively used to evaluate the scientific production of researchers and institutions through the bibliometric indicators they produce; and the publications that do not appear in these two platforms are often ignored in research evaluation processes.

Citation indexes include only those journals of the highest quality and as such, they cannot be comprehensive in representing the totality of the scientific fields they cover. There are many implications and benefits for a journal that is indexed in WoS and Scopus: the journal gains international visibility, thus the potential that its articles will be cited increases; they enable peers to collaborate and contribute to their scientific communities (Elsevier, 2014); and these indexes produce bibliometric indicators such as WoS’ Impact Factor (IF), Eigenfactor, H-index, Scopus’ Source Normalized Impact per Paper (SNIP), Impact per Publication (IPP), CiteScore (Scopus’ answer to the IF); and SCImago Journal Rank (SJR).

### **Web of Science**

WoS covers over 100 million records from 1900 to the present, including 50,000 scholarly books, 33,000 journals and 7.4 million conference proceedings (Clarivate Analytics, 2017d). WoS Core Collection contains three main indexes: SCIE, with 8,780 journals; SSCI, with 3,218; and AHCI, with approximately 2,500 (Clarivate Analytics, 2017a, 2017d).

In this analysis, we considered three of WoS’ indexes: SCIE, SSCI and the Emerging Sources Citation Index (ESCI). This latter multidisciplinary index of 5,954 journals was launched in late 2015, it does not include the IF for its journals, and it covers all fields within the sciences, social sciences, arts and humanities (Clarivate Analytics, 2017d). ESCI was established to “extend the universe of publications in Web of Science to include high-quality, peer-reviewed publications of regional importance and in emerging scientific fields (...) even if it [their content] has not yet demonstrated citation impact on an international audience” (Clarivate Analytics, 2017b: 1). Although ESCI is not as prestigious as SCIE or SSCI, Hardcastle and Drake (2017) state that ESCI “will improve the visibility of a journal, provides a mark of quality and is good for authors” (para. 6).

### **Scopus**

Scopus was established in 2004 by Elsevier. It includes 67 million records and it presents the descriptive metadata and citation data from 22,794 scientific journals, 145,000 scientific books, 400,000 conference proceedings and 27 million patents (Elsevier 2017a, 2017b). Scopus indexes a larger number of journals than WoS, but includes 90–95% of the journals included in the Journal Citation Reports (JCR) that have an IF (Elsevier, 2017a). Scopus is thus seen as being more inclusive than WoS and it calculates the CiteScore, a similar metric to the IF.

With its larger coverage, some experts, researchers and accreditation agencies for universities, such as Quacquarelli Symonds (2016) and Times Higher Education (2014), prefer to use Scopus over WoS to evaluate scientific production. In Mexico, the National Council of Science and Technology (CONACYT) and the SNI favor both WoS and Scopus; but currently they may be slightly preferring Scopus over WoS, at least for evaluating citation data (e.g. CONACYT, 2016).

### **Latin American journals standing in WoS and Scopus**

In order to conduct the following analysis of the presence of Latin American journals in WoS and Scopus, we located the official datasets required: 2015 JCR (Clarivate Analytics, 2017a), which includes the data of the Latin American journals indexed in SCIE and SSCI; ESCI’s journal list (Clarivate Analytics, 2017c); the Scopus Source List (Elsevier, 2017b); and a list of 32 Latin American countries, for limiting the data analysis to such countries. Having located all the datasets, we programmed a script using Python, in order to consolidate all the datasets in our database:

the Master List (Machin-Mastromatteo and Medina-Yllescas, 2017).

The Master List is structured in various columns, including: journal title, country, WoS indexing data: 2015 IF value, SCIE, SSCI and ESCI; Scopus indexing data: 2015 CiteScore value and a column to express the inclusion in Scopus ('Inactive' journals, which appear in the official dataset, were discarded). Having this structure, the Python script added an X to the columns of the indexes where each journal is indexed (SCIE, SSCI, ESCI and Scopus). The script prevented the creation of duplicate entries for each journal title in the Master List and consolidated within one row per journal all the available data for each journal title. It was not difficult to work with SCIE, SSCI and Scopus data, because they are available in spreadsheet format; but processing ESCI data was slightly different, as its data is contained in various html pages without much structure, as shown in Figure 1 (Clarivate Analytics, 2017c). The way the script worked with the ESCI html pages consisted in selectively copying certain parts of each journal's data, such as deleting the number placed before journal titles, copying the title and find coincidences between the country list and the address line. When it found a match, it added an X in the ESCI column of the Master List if it also found the title already in the list; otherwise, it copied the journal title in a new row.

<p><b>8. ABCD-ARQUIVOS BRASILEIROS DE CIRURGIA DIGESTIVA-BRAZILIAN ARCHIVES OF DIGESTIVE SURGERY</b>          Quarterly ISSN: 0102-6720          COLEGIO BRASILEIRO CIRURGIA DIGESTIVA-CBCD, AV BRIGADEIRO LUIZ ANTONIO, 278-6-SALAS 10 E 11, SAO PAULO SP, BRAZIL, 01318-901  <a href="#">1. Emerging Sources Citation Index</a></p>
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**Figure 1. Example of a journal indexed in ESCI, as presented in html form. Source: Clarivate Analytics (2017c)**

The resulting Master List allows determining if a given journal is indexed in any of the studied WoS indexes, the value of its IF, if it is also indexed in Scopus and the value of its CiteScore. For example, the best ranked journal in the region is *Andean Geology*, published in Chile, indexed in WoS SCIE, with a 2015 IF of 2.18, and it is also indexed in Scopus, with a 2015 CiteScore of 1.82. Although the IF is not necessarily equivalent to CiteScore and they differ, they are similar metrics that have been compared and criticized for similar reasons (e.g. Bergstrom and West, 2016). Even so, we have used these two metrics, which fortunately are both available for the same year (2015), to rank the journals in the Master List by calculating an average between them and sorting the journals from the highest value to the lowest. This way, journals that are both indexed in WoS and Scopus with a high IF and CiteScore have a better possibility of being at the top of the resulting journal rank than those that are either in WoS or in Scopus and only have a high IF or high CiteScore, but not both. The Master List ranks 1,307 Latin American journals that are present in the studied indexes, it encompasses 805 journals that are indexed in SCIE, SSCI and/or Scopus and 502 titles only indexed in ESCI. The complete Master List is available in Machin-Mastromatteo and Medina-Yllescas (2017); but the IF and CiteScore values have been omitted, as they are owned by their respective companies and are only accessible through a subscription to their services. The top 10 titles in this ranking are: *Andean Geology* (Chile), *Revista Mexicana de Astronomía y Astrofísica* (Mexico), *Revista Brasileira de Psiquiatria* (Brazil), *Jornal de Pediatria* (Brazil), *Annals of Hepatology* (Mexico), *Memorias do Instituto Oswaldo Cruz* (Brazil), *Biological Research* (Chile), *Journal of Soil Science and Plant Nutrition* (Chile), *Genetics and Molecular Biology* (Brazil), and *Clinics* (Brazil). Table 1 summarizes the current status and presence of Latin American journals in WoS and Scopus. It shows the countries that have journals indexed in either of the three WoS indexes studied (SCIE, SSCI and ESCI) and in Scopus, as well as the number of titles that overlap between SCIE, SSCI and Scopus, and those that overlap between ESCI and Scopus.

Triple-A journals are defined in this analysis as those that are indexed in SCIE, SSCI and/or in Scopus. The total number of triple-A journals was calculated by adding the number of journals indexed in SCIE, SSCI and Scopus and subtracting the SCIE/SSCI-Scopus overlap, in order to avoid counting the same journal title more than once. It should be noted that in the journal count we conducted, there are some journals that appear in both SCIE and SSCI, these journals are mainly from the fields of clinical psychology, nursing and public health. Such are the cases of *Revista Argentina de Clínica Psicológica* (Argentina); *Revista Brasileira de Psiquiatria*, *Revista de Saude Publica*, *Cadernos de Saude Publica*, *Acta Paulista de Enfermagem*, *Revista Latino-Americana de Enfermagem*,

**Table 1. Current status of Latin American journals in WoS and Scopus, triple-A journals and potential triple-A journals. Sources: datasets from Clarivate Analytics (2017a, 2017c) and Elsevier (2017b).**

Country	Web of Science			Scopus	Overlap SCIE/SSCI-Scopus	Overlap ESCI-Scopus	Total triple-A journals	Potential triple-A journals
	SCIE	SSCI	ESCI					
Brazil	110	11	185	333	78	10	376	175
Mexico	25	15	33	99	30	6	109	27
Chile	22	12	36	91	27	4	98	32
Colombia	10	5	128	78	9	9	84	119
Argentina	14	4	55	53	11	6	60	49
Venezuela	7	1	27	39	5	2	42	25
Cuba			19	23		1	23	18
Peru			12	5			5	12
Jamaica	1			4	1		4	0
Costa Rica	1		21	2	1		2	21
Ecuador			11	2			2	11
Bolivia			1				0	1
El Salvador			1				0	1
Nicaragua			2				0	2
Paraguay			1				0	1
Trinidad and Tobago			1				0	1
Uruguay			7				0	7
<b>Total Region</b>	<b>190</b>	<b>48</b>	<b>540</b>	<b>729</b>	<b>162</b>	<b>38</b>	<b>805</b>	<b>502</b>

*Revista da Escola de Enfermagem da USP*, and *Custos e Agronegocio On Line* (from Brazil); and *Revista de Geografia Norte Grande*, and *Acta Bioethica* (from Chile). As these journals are the same title, we counted them as indexed only in SCIE, in order to avoid counting the same journal title more than once and hence avoid inflating the number of titles. There is also one journal that appears in both SCIE and ESCI: *Genetics and Molecular Research* (Brazil). A possible but unconfirmed explanation is that these journals were in the former index for 2015 JCR, but were delisted and moved to ESCI at some moment between the establishment of ESCI in late 2016 and at the moment of writing this paper. This case has been counted as belonging to SCIE because it is not possible to confirm the explanation given and in order to provide a scenario that is faithful to 2015 JCR.

The reasoning behind not counting ESCI-only journals in our triple-A categorization is that these are arguably in a less advanced situation regarding the assertion and confirmation of their quality than those titles present in both ESCI and Scopus; these latter titles would have a better standing because they have passed two different evaluations (ESCI + Scopus) instead of just one evaluation that is not as demanding (ESCI) as the others. ESCI performs an arguably less strict journal evaluation than Scopus (and surely less strict than SCIE and SSCI), which may be appreciated when comparing the two mentioned overlaps: the number of titles that overlap in the case of SCIE/SSCI-Scopus is higher than those of ESCI-Scopus, at least for the countries studied. According to our analysis, Latin America has 805 triple-A journals, in number of journals and percentages, they are distributed as follows: Brazil (376, 46.71%), Mexico (109, 13.54%), Chile (98, 12.17%), Colombia (84, 10.43%), Argentina (60, 7.45%), Venezuela (42, 5.22%), Cuba (23, 2.86%), Peru (5, 0.62%), Jamaica (4, 0.50%), Costa Rica (2, 0.25%) and Ecuador (2, 0.25%).

Potential triple-A journals are defined as those that are already included in ESCI, which poses the least demanding evaluation from the indexes studied, but have not made it to Scopus yet. These are journals that surely have shown promise and that may request a Scopus evaluation while they continue growing to have the quality requirements needed to be included in either SCIE or SSCI. These potential journals were calculated by subtracting the ESCI-Scopus overlap to the number of journals indexed in ESCI, so those that are already in both indexes are excluded from this count. Meaning that the data presented suggests that Scopus has a larger overlap with WoS in the case of the journals with the highest quality (SCIE, SSCI) and a lower overlap with journals of consolidating quality (ESCI).

Latin America has 502 potential triple-A journals, in number of journals and percentages, they are distributed as follows: Brazil (175 titles, 34.86%), Colombia (119, 23.71%), Argentina (49, 9.76%), Chile (32, 6.37%), Mexico (27, 5.38%), Venezuela (25, 4.98%), Costa Rica (21, 4.18%), Cuba (18, 3.59%), Peru (12, 2.39%), Ecuador (11, 2.19%), Uruguay (7, 1.39%), Nicaragua (2, 0.40%), Bolivia (1, 0.20%), El Salvador (1, 0.20%), Paraguay (1, 0.20%), and Trinidad and Tobago (1, 0.20%). These numbers indicate the number of regional journals that, if they continue growing in quality and reach a better standing by being indexed in SCIE, SSCI and Scopus, can become triple-A journals. Interestingly, Colombia has many journals in ESCI, the second largest amount in the region after Brazil (1<sup>st</sup> place in the triple-A ranking), and much more than Mexico (2<sup>nd</sup> place). If Colombia manages to get some of these journals into the triple-A status as we have defined it, they may overtake the 2<sup>nd</sup> place from Mexico, which has much less journals in ESCI.

## Conclusion

Latin America has a relatively good standing with the number of journals included in the indexes discussed in this work, which are the most demanding in the world and are an indicator of the quality and quantity of the scientific production in the region. However, there are many countries of the region with very low numbers or with none at all. This is an effect that might be explained by several causes, but we do not intend to indicate any direct correlation, as proving such relationship goes well beyond the scope of these series of works under the common title 'Latin American triple-A journals'. Such causes may include, in no particular order: a) the number of individuals per country that integrate its learning communities, specifically scientific research communities, universities and in general individuals with research and scholarly training; b) the amount of institutions capable of conducting research and innovation; c) the availability of the necessary human resources with the appropriate professional profile and training to be journal editors, editorial board members, peer reviewers and other stakeholders that are vital to run successful journals and push their growth and quality; d) the number of individuals with a doctoral degree per country, who are the people that will most likely research, publish, and hence, drive forward the growth and the quality of their countries' journals; and e) economic factors would surely have some influence in a region that is very much challenged by them, such as countries' Gross Domestic Product, and its distribution toward educational, research and innovation areas, specifically governments' allocation of enough funds to universities, research institutions, national publications, and incentive programs that may aid researchers and foster their production.

As will be detailed in the next issue of 'Latin American triple-A journals', there are many more journals in the region than those studied here, as we will study Latin American journals' presence in other recognized indexes and platforms such as Scimago Journal and Country Rank, DOAJ, Latindex, SciELO, and RedALyC; all of which also set some quality standards they use to evaluate the journals that they index. For instance, Latindex, has indexed more than 5,000 Latin American titles that comply with their criteria, similarly, SciELO indexes more than 1,200 titles and RedALyC has over a thousand. It should be kept in mind that the number of journals discussed in this paper are those that have passed some of the most demanding journal evaluation procedures in the world. Latin America has many more institutional, local and regional journals that may not have the necessary citation rates, scope and characteristics that WoS and Scopus demand and hence have not appeared in this analysis. However, except for the citation rates, many of the other requirements demanded by these indexes and by those that we will discuss in the next issue are quite achievable by many journals. Those journals that already made it to ESCI are a good evidence of this.

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