Introduction

The SIR (SCImago Institutions Rankings) is a characterization of institutions based on research. Every year, SCImago Research Group publishes two reports on institutions, the Ibero-American SIR (SCImago Research Group, 2015a) and the Global SIR (SCImago Research Group, 2015b). The former usually appears in March and it includes all higher education institutions of Ibero-American countries with at least one document published in the Scopus database during the selected five-year period. The Global SIR is published in July and it takes into account those organizations from any country, with at least 100 documents published in the last year of the five-year period. The sort of documents includes all types; that is, articles, reviews, short reviews, letters, conference papers, etc. as collected by worldwide leader scientific database Scopus by Elsevier. The chronological range extends from 2003 to 2013 for the SIR IBER and from 2005 to 2014 for the Global; each report represents the selected time period with indicators.

The SIR reports ARE NOT LEAGUE TABLES. The ranking parameter -the scientific output of institutions- should be understood as a default rank, not our ranking proposal. The only goal of this report is to characterize research outcomes of organizations to provide useful scientometric information to institutions, policymakers and research managers for the analysis, evaluation and improvement of their research results. If someone uses this report to rank institutions or to build a league table with any purpose, he/she will act under his/her own responsibility.

Every year, all previous reports are regenerated so that each of them reflects the current state of the database at all times. The database editor makes retrospective data loads in order to maintain consistency between the reports and the Scopus database. Therefore, it is necessary to regenerate the reports’ regular updates since the inclusion of new documents in the database may affect the indicators from previous years.

This year, as in previous years, a new version of the SCImago Institutions Rankings (SIR) reports is released. The reports show a set of bibliometric indicators that unveil some of the main dimensions of research devoted institutions’ performance. This set of indicators will help users evaluate the scientific impact, thematic specialization, output size and international collaboration networks of institutions. SIR Reports aim at becoming an evaluation framework of research performance for Research Organizations.
Currently, the SIR World Reports are the most comprehensive characterization of research institutions among those dedicated to the analysis of research results of institutions worldwide. The intended target audience of SIR World Reports is very diverse and it is formed by policymakers, research managers, researchers, media and general public interested in finding out about research performance of institutions worldwide.

**SIR IBER**

The Ibero-American ranking aims to be a research evaluation tool. It has a dual purpose. On the one hand, it aims to provide an overview, helping policy makers to compare Ibero-American institutions’ research results to the targets set in the national programs for science. On the other hand, from a more specific point of view, it provides a benchmarking tool for the own higher education institutions in the region. The ranking last version includes 1,753 Higher Education institutions from Latin America, Spain, Portugal and Andorra.

**Data Source**

Such an ambitious tool requires a very extensive data source. Scopus is the world’s most comprehensive international and multi-disciplinary database for scientific literature, containing mainly scholarly journals and conference proceedings. The journals included in Scopus meet the academic quality standards, particularly the peer-review system. Scopus covers scientific publications from all regions and a vast collection of journal titles in non-English language (Moya-Anegón, et al., 2007; Scopus, 2013).

Scopus data coverage (updated January 2015):

- **Journals**: 21,000
  - Peer-review Journals: 20,000
  - Open Access Journals: 2,800
- **Serial books**: 370
- **Conference papers**: 6.5 millions
- **Publishers**: 5,000
  - Publishers with *Articles-in-Press*: 3,850
- **Records**: 50 millions


**Coverage Periods**

SCImago Research Group, for the SIR implementation, processes information of documents contained in Scopus published from 2003 to the present, in each of the editions. Institutions are certainly units sensitive to conditioning factors external to the organization. Therefore, for the development of each
new version of SIR, five-year periods are set for the analysis. In this manner, we stabilize the calculation of scientometric indicators and prevent to operate with data from one particular year related with a specific situation. The available versions of SIR are the following:

- SIR 2015. Scientific production on the period 2009-2013
- SIR 2012. Scientific production on the period 2006-2010

**Standardization**

In order to achieve the highest level of precision in the institutional rankings for the different indicators, an extensive manual process of disambiguation of the institution’s names has been carried out. The development of an assessment tool for bibliometric analysis aimed to characterize research institutions involves an enormous data processing task related to the identification and disambiguation of institutions through the institutional affiliation of documents included in Scopus. The objective of SCImago, in this respect, is twofold:

- Definition and unique identification of institutions: The drawing up of a list of research institutions where every institution is correctly identified and defined. Typical issues on this task include institution’s merge or segregation and denomination changes.

- Attribution of publications and citations to each institution. We have taken into account the institutional affiliation of each author in the field ‘affiliation’ of the database. We have developed a mixed system (manual and automatic) for the assignment of affiliations to one or more institutions, as applicable. Thoroughness in the identification of institutional affiliations is one of the key values of the guaranteed standardization process, in any case, the highest possible levels of disambiguation.
Indicators

**IBE** → Position of the organization in the Ibero-American context (LAC, Spain, Portugal and Andorra), taking into account the value of the indicator by which the list has been sorted. Same value, same position.

**LAC** → Position of the organization in the Latin-American context, taking into account the value of the indicator by which the list has been sorted. Same value, same position.

**CO** → Position of the organization in the national context, taking into account the value of the indicator by which the list has been sorted. Same value, same position.

**Organization** → Official name of the organization.

**Country** → ISO Code 3166-1 alpha-3 of the country in which the organization is located.

**O. Output** → Total number of documents published in scholarly journals indexed in Scopus (Romo-Fernández, et al., 2011). This is a size dependent indicator.

**% IC. International Collaboration** → Institution's output ratio produced in collaboration with foreign institutions. The values are computed by analyzing an institution’s output whose affiliations include more than one country address (Guerrero-Bote, Olmeda-Gómez and Moya-Anegón, 2013; Lancho-Barrantes, Guerrero-Bote and Moya-Anegón, 2013; Lancho-Barrantes, et al., 2013; Chinchilla-Rodríguez, et al., 2012). This is a size-independent indicator.

**NI. Normalized Impact** → Normalized Impact is computed using the methodology established by the Karolinska Institutet in Sweden where it is named "Item oriented field normalized citation score average". The normalization of the citation values is done on an individual article level. The values (in decimal numbers) show the relationship between an institution’s average scientific impact and the world average set to a score of 1, --i.e. a NI score of 0.8 means the institution is cited 20% below world average and 1.3 means the institution is cited 30% above average (Rehn and Kronman, 2008; González-Pereira, Guerrero-Bote and Moya-Anegón, 2011). This is a size-independent indicator.

**% Q1. High Quality Publications** → Ratio of publications that an institution publishes in the most influential scholarly journals of the world, those ranked in the first quartile (25%) in their categories as ordered by SCImago Journal Rank (SJRJII) indicator (Miguel, Chinchilla-Rodríguez and Moya-Anegón, 2011). This is a size-independent indicator.

**Spec. Specialization Index** → The Specialization Index indicates the extent of thematic concentration or dispersion of an institution’s scientific output. Values range between 0 and 1, indicating generalist vs. specialized institutions respectively. This indicator is computed according to the Gini Index used in...
Economy (Moed, et. al., 2011; López-Illlescas, Moya-Anegón and Moed, 2011; Arencibia-Jorge et al., 2012). An indicator value of 0 signifies that data are insufficient to calculate. This indicator is size-independent.

**% Exc. Excellence Rate** → Excellence rate indicates the amount (in %) of an institution’s scientific output that is included in the top 10% of the most cited papers in their respective scientific fields. It is a measure of high quality output of research institutions (SCImago Lab, 2011; Bornmann, Moya-Anegón and Leydesdorff, 2012; Guerrero-Bote and Moya-Anegón, 2012). This is a size-independent indicator.

**% Lead. Scientific Leadership** → Leadership indicates an institution’s output as main contributor, that is, the number of papers in which the corresponding author belongs to the institution (Moya-Anegón, 2012; Moya-Anegón et. al, 2013). This is a size-independent indicator.

**% EwL. Excellence with Leadership** → Excellence with Leadership indicates the amount of documents in the Excellence rate in which the institution is the main contributor (Moya-Anegón, et al., 2013). This is a size-independent indicator.

A new application is available in all the PDF’s versions: the access to a report by institution showing its evolution during the five-year periods according to the SIR indicators.

![Figure 1. Institution Report](Image)

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<td>1/1</td>
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<td>Country Rank (Sector/Global)</td>
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<td>1/1</td>
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<td>% International Collaboration</td>
<td>25.94</td>
<td>25.64</td>
<td>25.2</td>
<td>25.17</td>
<td>25.09</td>
<td>26.34</td>
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<tr>
<td>% Q1</td>
<td>40.74</td>
<td>38.96</td>
<td>37.64</td>
<td>37.12</td>
<td>37.98</td>
<td>38.33</td>
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<td>2.08</td>
<td>2.07</td>
<td>2.03</td>
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<td>2</td>
<td>1.96</td>
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<tr>
<td>% Excellence</td>
<td>9.24</td>
<td>9.05</td>
<td>8.99</td>
<td>8.88</td>
<td>8.83</td>
<td>8.76</td>
<td>8.58</td>
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<tr>
<td>% Leadership</td>
<td>63.43</td>
<td>62.76</td>
<td>62.16</td>
<td>61.67</td>
<td>61</td>
<td>60.26</td>
<td>59.53</td>
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<tr>
<td>% Excellence with Leadership</td>
<td>4.78</td>
<td>4.65</td>
<td>4.58</td>
<td>4.43</td>
<td>4.21</td>
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Results

The number of Ibero-American institutions of higher education with scientific activity present in the Scopus database has steadily increased over the years. Since the first version published in 2009 to the last version, 300 (17%) universities have started their publication activity in the international scientific circuits, which shows the strong efforts made by the region to join the mainstream of world science.

There are three well-differentiated groups of countries according to the number of higher education institutions with a presence in the Ibero-American SIR. The following analysis includes the 100 most productive universities. Brazil considerably increases the number of universities with a presence in the Scopus database in the SIR version from 2009 and the last version; also Colombia increases from 2013. By contrast, in Argentina and Venezuela it can be observed a decrease in the number of institutions with production in international journals. Third group of countries comprises those with consolidated universities, that is to say, universities with a similar evolution of their production over the period: Spain, Portugal, Mexico, Chile, Puerto Rico, Uruguay and Jamaica. And the latter is Cuba with production only in 2009.

Table 1. SIR Iber. First 100 positions of output of universities by country and release

<table>
<thead>
<tr>
<th>Años</th>
<th>ESP</th>
<th>BRA</th>
<th>PRT</th>
<th>MEX</th>
<th>ARG</th>
<th>CHL</th>
<th>COL</th>
<th>PRI</th>
<th>URY</th>
<th>VEN</th>
<th>JAM</th>
<th>CUB</th>
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<tr>
<td>2009</td>
<td>45</td>
<td>26</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
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<tr>
<td>2010</td>
<td>43</td>
<td>27</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
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<tr>
<td>2011</td>
<td>43</td>
<td>29</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>2012</td>
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<td>7</td>
<td>8</td>
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<tr>
<td>2013</td>
<td>43</td>
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<td>7</td>
<td>7</td>
<td>4</td>
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<tr>
<td>2014</td>
<td>42</td>
<td>31</td>
<td>8</td>
<td>7</td>
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<tr>
<td>2015</td>
<td>42</td>
<td>32</td>
<td>7</td>
<td>7</td>
<td>3</td>
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<td>3</td>
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</table>
If we apply the same threshold but exclusively for the countries which make up Latin America, we observe different trends especially in the countries with a moderate production. Brazil, Chile and Colombia increase the number of institutions more productive by the SIR LAC version, Mexico, Argentina and Venezuela gradually decrease the number of institutions and a new set of countries appears, with seven countries which remain with only one institution within the specified threshold in each year, showing that their growth is unlikely, but that institutions surpassing the fixed threshold are stable.

Table 2. SIR LAC. First 100 positions of output of universities by country and release

<table>
<thead>
<tr>
<th>Year</th>
<th>BRA</th>
<th>MEX</th>
<th>ARG</th>
<th>CHL</th>
<th>COL</th>
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<th>PER</th>
<th>PRI</th>
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<tbody>
<tr>
<td>2009</td>
<td>44</td>
<td>17</td>
<td>14</td>
<td>8</td>
<td>4</td>
<td>6</td>
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<td>2010</td>
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<tr>
<td>2011</td>
<td>48</td>
<td>15</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>4</td>
<td>1</td>
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<td>2014</td>
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SIR Iber 2015

Nearly half of the Iber-American higher education institutions are concentrated in just two countries, Brazil and Mexico, followed by Colombia and Spain and below 100 universities, we have also Argentina, Portugal, Venezuela, Peru and Chile. The rest of countries in the region are below the 50 institutions of higher education with production in Scopus in the period 2009-2013, there are 12 countries in which only one institution from the sector publishes.

Figure 3. SIR Iber 2015. Universities by Iberoamerican country
References


