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ACADEMIC RANKING OF WORLD UNIVERSITIES 2021

Abstract. In this paper the Academic Ranking of World Universities 2021 is considered. The publication of the Institute of Higher Education, Shanghai Jiao Tong University, Academic Ranking of World Universities 2021, ARWU 2021 is analyzed. Those universities ranked between 1 and 1000. In this paper Shanghai World rank list of the top 20 universities in 2021 and the ranking of the universities of the region, University of Belgrade, University of Novi Sad, University of Zagreb, University of Ljubljana, Eotvos Lorand University, University of Szeged, and Semmelweis University are illustrated. ARWU uses six objective indicators to rank world universities, including the number of alumni and staff winning Nobel Prizes and Fields Medals, number of highly cited researchers selected by Clarivate Analytics, number of articles published in journals of Nature and Science, number of articles indexed in Science Citation Index - Expanded and Social Sciences Citation Index, and per capita performance of a university.

Keywords. Academic Ranking of World Universities 2021, Higher Education, Institute of Higher Education, Shanghai Jiao Tong University, University of Belgrade, University of Novi Sad, University of Zagreb, University of Ljubljana, Eotvos Lorand University, University of Szeged, Semmelweis University, indicators.

1. Introduction

The Academic Ranking of World Universities (ARWU) was first published in June 2003 by the Center for World-Class Universities (CWCU), Graduate School of Education of Shanghai Jiao Tong University, China, and updated on an annual basis [1-2]. Since 2009 the Academic Ranking of World Universities (ARWU) has been published and copyrighted by ShanghaiRanking Consultancy. ShanghaiRanking Consultancy is a fully independent organization on higher education intelligence and not legally subordinated to any universities or government agencies. ARWU considers every university that has any Nobel Laureates, Fields Medalists, Highly Cited Researchers, or papers published in Nature or Science. In addition, universities with a significant number of papers indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI) are also included. In total, more than 2000 universities are ranked, and the best 1000 are published.

In this paper Shanghai World rank list of the top 20 universities in 2021 and the ranking of the universities of the region, University of Belgrade, University of Novi Sad, University of Zagreb, University of Ljubljana, Eotvos Lorand University, University of Szeged and Semmelweis University are illustrated [3]. The paper is organized as follows: section 1: Introduction, in section 2 Indicators and Weights for

ARWU is illustrated, in section 3 Shanghai World rank list of the top 20 universities in 2021 is presented, in section 4 Shanghai World rank list of the region in 2021 is presented, and conclusion is given in section 5.

2. Indicators and Weights for ARWU

ARWU uses six objective indicators to rank world universities, including the number of alumni and staff winning Nobel Prizes and Fields Medals, number of highly cited researchers selected by Clarivate Analytics, number of articles published in journals of Nature and Science, number of articles indexed in Science Citation Index - Expanded and Social Sciences Citation Index, and per capita performance of a university (Table 1) [4,5].

Criteria	Indicator	Code	Weight
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10%
Quality of Faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20%
	Highly Cited Researchers	HiCi	20%
Research Output	Papers published in Nature and Science*	N&S	20%
	Papers indexed in Science Citation Index-Expanded and Social Science Citation Index	PUB	20%
Per Capita Performance	Per capita academic performance of an institution	PCP	10%

Table 1. Indicators and Weights for ARWU

Definition of Indicators:

Alumni: The total number of the alumni of an institution winning Nobel Prizes and Fields Medals. Alumni are defined as those who obtain bachelor's, master's, or doctoral degrees from the institution.

Award: The total number of the staff of an institution winning Nobel Prizes in Physics, Chemistry, Medicine and Economics and Fields Medal in Mathematics. Staff is defined as those who work at an institution at the time of winning the prize.

HiCi: The number of Highly Cited Researchers selected by Clarivate Analytics. The Highly Cited Researchers list issued in November 2020 was used for the calculation of HiCi indicator in ARWU 2021. Only the primary affiliations of Highly Cited Researchers are considered.

N&S: The number of papers published in Nature and Science between 2016 and 2020. Only publications of 'Article' type are considered.

PUB: Total number of papers indexed in Science Citation Index-Expanded and Social Science Citation Index in 2016.

PCP: The weighted scores of the above five indicators divided by the number of full-time equivalent academic staff.

Data Sources are:

Nobel laureates: <http://nobelprize.org/>,

Fields Medals: <http://www.mathunion.org/>,

Highly cited researchers: <https://clarivate.com/webofsciencegroup/researcher-recognition/>.

Papers published in Nature and Science: <http://www.webofscience.com/>,

Articles indexed in Science Citation Index-Expanded and Social Science Citation Index: <http://www.webofscience.com/>,

Others: Number of academic staff data is obtained from national agencies such as:

- National Ministry of Education,
- National Bureau of Statistics,
- National Association of Universities and Colleges,
- National Rector's Conference.

3. Shanghai World rank list of the top 20 universities in 2021





















Table 2 presents the Shanghai World rank list of the top 20 universities in 2021 [1] (15. Aug. 2021). The table shows that there are 16 universities in North America - USA and 4 universities in Europe:

University of Cambridge,

University of Oxford,

Paris-Saclay University,

University College London.

Academic Ranking of World Universities 1000 Institutions						
World Rank	Institution	Country/Region	National/Regional Rank	Total Score	Alumni	
1	 Harvard University		1	100.0	100.0	
2	 Stanford University		2	75.9	45.0	
3	 University of Cambridge		1	70.6	78.8	
4	 Massachusetts Institute of Technology (MIT)		3	69.5	71.6	
5	 University of California, Berkeley		4	66.0	63.8	
6	 Princeton University		5	59.7	58.0	
7	 University of Oxford		2	59.2	48.0	
8	 Columbia University		6	58.0	58.5	
9	 California Institute of Technology		7	57.9	53.9	
10	 University of Chicago		8	54.7	57.7	





















11		Yale University		9	53.6	48.3
12		Cornell University		10	50.3	41.7
13		Paris-Saclay University		1	49.4	27.9
14		University of California, Los Angeles		11	48.9	27.2
15		University of Pennsylvania		12	47.8	32.9
16		Johns Hopkins University		13	47.6	37.7
17		University College London		3	47.3	27.7
18		University of California, San Diego		14	46.3	18.5
19		University of Washington		15	46.2	23.3
20		University of California, San Francisco		16	44.6	0.0

Table 2. Shanghai World rank list of the top 20 universities in 2021 (15. Aug. 2021)

4. Shanghai World rank list of the region in 2021

The ARWU 2021 ranking universities of the region, the University of Belgrade, University of Novi Sad, University of Zagreb, University of Ljubljana, Eotvos Lorand University, University of Szeged, and Semmelweis University are illustrated. Institutions within the same rank range are listed alphabetically.

Serbia

The ARWU 2021 ranking of the University of Belgrade given in Figure 1.



Figure 1. The ARWU 2021 ranking of the University of Belgrade.

The ARWU 2021 ranking of the University of Novi Sad is given in Figure 2.



Figure 2. The ARWU 2021 ranking of the University of Novi Sad.

Croatia

The ARWU 2021 ranking of the University of Zagreb is given in Figure 3.



Figure 3. The ARWU 2021 ranking of the University of Zagreb.

Slovenia

The ARWU 2021 ranking of the University of Ljubljana is given in Figure 4.



Figure 4. The ARWU 2021 ranking of the University of Ljubljana.

Hungary

The ARWU 2021 ranking of the Eotvos Lorand University is given in Figure 5.



Figure 5. The ARWU 2021 ranking of the Eotvos Lorand University.

The ARWU 2021 ranking of the University of Szeged is given in Figure 6.



Figure 6. The ARWU 2021 ranking of the University of Szeged.

The ARWU 2021 ranking of the Semmelweis University is given in Figure 7.



Figure 7. The ARWU 2021 ranking of the Semmelweis University.

5. Conclusion

In this paper the Academic Ranking of World Universities 2021 is considered. Shanghai World rank list of the top 20 universities in 2021 and the ranking of the universities of the region, University of Belgrade, University of Novi Sad, University of Zagreb, University of Ljubljana, Eotvos Lorand University, University of Szeged, and Semmelweis University are illustrated. From the region the University of Belgrade (501-600) and University of Ljubljana (501-600) are the best universities on the Shanghai World rank list 2021.

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