Universidade do Porto no The Academic Ranking of World Universities (ARWU) – Shanghai Ranking 2014

http://www.shanghairanking.com/index.html

I. Metodologia do ARWU - Shanghai Ranking e participação da U.Porto

"The Academic Ranking of World Universities (ARWU) is conducted by researchers at the Center for World-Class Universities of Shanghai Jiao Tong University (CWCU). […]

The Academic Ranking of World Universities (ARWU) is published and copyrighted by ShanghaiRanking Consultancy. ShanghaiRanking Consultancy is a fully independent organization on higher education information and not legally subordinated to any universities or government agencies.""[1]

"**Selection of Universities**

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 significant amount of papers indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI) are also included. In total, more than 1200 universities are actually ranked and the best 500 are published on the web.

Ranking Criteria and Weights

Universities are ranked by several indicators of academic or research performance, including alumni and staff winning Nobel Prizes and Fields Medals, highly cited researchers, papers published in Nature and Science, papers indexed in major citation indices, and the per capita academic performance of an institution. For each indicator, the highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score. The distribution of data for each indicator is examined for any significant distorting effect; standard statistical techniques are used to adjust the indicator if necessary. Scores for each indicator are weighted as shown below to arrive at a final overall score for an institution. The highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score. An institution's rank reflects the number of institutions that sit above it.

Indicators and Weights for ARWU

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 in 21 broad subject categories	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%
Total			100%

* For institutions specialized in humanities and social sciences such as London School of Economics, N&S is not considered, and the weight of N&S is relocated to other indicators.

[1] http://www.shanghairanking.com/aboutus.html acedido 03/11/2014

Definition of Indicators

Indicator	Definition
Alumni	The total number of the alumni of an institution winning Nobel Prizes and Fields Medals. Alumni are defined as those who obtain bachelor, Master's or doctoral degrees from the institution. Different weights are set according to the periods of obtaining degrees. The weight is 100% for alumni obtaining degrees in 2001-2010, 90% for alumni obtaining degrees in 1991-2000, 80% for alumni obtaining degrees in 1981-1990, and so on, and finally 10% for alumni obtaining degrees in 1911-1920. If a person obtains more than one degrees from an institution, the institution is considered once only.
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. Different weights are set according to the periods of winning the prizes. The weight is 100% for winners after 2011, 90% for winners in 2001-2010, 80% for winners in 1991-2000, 70% for winners in 1981-1990, and so on, and finally 10% for winners in 1921-1930. If a winner is affiliated with more than one institution, each institution is assigned the reciprocal of the number of institutions. For Nobel prizes, if a prize is shared by more than one person, weights are set for winners according to their proportion of the prize.
HiCi	The number of Highly Cited Researchers selected by Thomson Reuters. Thomson Reuters had issued two lists of Highly Cited Researchers: the old list was first issued in 2001, it identified more than 6,000 researchers and the number of Highly Cited Researcher of an institution on that list was used in ARWU from 2003 to 2013. In 2014, Thomson Reuters developed a new list of Highly Cited Researchers with some 3,000 names based on a different methodology. In order to have a relatively smooth transition to the new list of Highly Cited Researchers and avoid too much fluctuations of ranking results due to the methodological change in developing Highly Cited Researchers list, both the old Highly Cited Researchers list and the new Highly Cited Researchers list are used in the calculation of HiCi indicator in ARWU 2014, and they are equally weighted. The score on HiCi of an institution in ARWU 2014 is the sum of its score for the old list and that for the new list (Click here to see all these scores). An institution's HiCi score for the old list is the same as its HiCi score in ARWU 2013, and an institution's HiCi score for the new list depends on its number of Highly Cited Researchers on the new list. It is worth noting that, upon the suggestion of many institutions and researchers including some Highly Cited Researchers, only the primary affiliations of new Highly Cited Researchers are considered in the calculation of an institution's HiCi score for the new list.
N&S	The number of papers published in Nature and Science between 2009 and 2013. To distinguish the order of author affiliation, a weight of 100% is assigned for corresponding author affiliation, 50% for first author affiliation (second author affiliation if the first author affiliation is the same as corresponding author affiliation), 25% for the next author affiliation, and 10% for other author affiliations. Only publications of 'Article' type is considered.
PUB	Total number of papers indexed in Science Citation Index-Expanded and Social Science Citation Index in 2013. Only publications of 'Article' type is considered. When calculating the total number of papers of an institution, a special weight of two was introduced for papers indexed in Social Science Citation Index.
PCP	The weighted scores of the above five indicators divided by the number of full-time equivalent academic staff. If the number of academic staff for institutions of a country cannot be obtained, the weighted scores of the above five indicators is used. For ARWU 2014, the numbers of full-time equivalent academic staff are obtained for institutions in USA, UK, France, Canada, Japan, Italy, China, Australia, Netherlands, Sweden, Switzerland, Belgium, South Korea, Czech, Slovenia, New Zealand etc.

Data Sources

Indicator:Data Source

Nobel laureates:http://nobelprize.org/

Fields Medals:http://www.mathunion.org/index.php?id=prizewinners

Highly cited researchers:http://www.highlycited.com/

Papers published in Nature and Science:http://www.webofknowledge.com/

Articles indexed in Science Citation Index-Expanded and Social Science Citation Index:http://www.webofknowledge.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.[2]

Apesar de a informação não ser usada na elaboração do Shanghai Ranking, desde 2011, a Universidade do Porto responde ao inquérito Global Research University Profiles (GRUP) do The Center for World-Class Universities (CWCU) of Shanghai Jiao Tong University.

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[2] http://www.shanghairanking.com/ARWU-Methodology-2014.html acedido 03/11/2014

II. Posição das Universidades portuguesas no ARWU Shanghai Ranking

Universidade do Porto: Evolução[3]

	2007	2008	2009	2010	2011	2012	2013	2014
Ranking Mundial	403-510	402-503	402-501	401-500	301-400	301-400	301-400	301-400
Ranking Europeu	173-208	169-210	171-208	169-204	124-164	124-158	127-164	122-160
Ranking Iberoamericano	13*	13*	15	9	8	8-17	13*	9-17***
Ranking Nacional	1**	1**	1**	1**	1	1	1-2	2

* A par com a PUC do Chile, a Universidade do Chile, a UNESP, a UFRGS, a Universidade de Granada, a Universidade de Lisboa, a Universidade de Sevilha e a Universidade de Saragoça.

** A par com a Universidade de Lisboa

*** A par com Complutense University of Madrid, Federal University of Minas Gerais, Federal University of Rio de Janeiro, Polytechnic University of Valencia, UNESP, University of Campinas, University of Granada e University of Pompeu Fabra.

Universidades portuguesas no ARWU Shanghai Ranking 2014

	World rank	Europe rank	Iberoamerica rank	Portugal rank
University of Lisbon	201-300	81-121	4-8	1
University of Porto	301-400	122-160	9-17	2
University of Coimbra	401-500	161-205	18-25	3

Scores das Universidades portuguesas no ARWU Shanghai Ranking 2014

World Rank	University	TotalScore	Alumni	Award	HiCi	N&S	PUB	PCP
201-300	University of Lisbon	n/d	0	8.1	5	10.8	46.8	22.8
301-400	University of Porto	n/d	0	0	0	9.4	42.7	20.3
401-500	University of Coimbra	n/d	0	0	0	8.2	33.9	16.2

n/d – O Total Score só é apresentado para as 100 primeiras universidades.

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[3] Dados de 2007 a 2013 retirados de "Evolução das posições da Universidade do Porto nos rankings universitários", janeiro de 2014, *in*
https://sigarra.up.pt/up/pt/conteudos_service.conteudos_cont?pct_id=20113&pv_cod=55GoHdmanvlq

Scores PCP das Universidades portuguesas no ARWU Shanghai Ranking 2014 e ARWU Alternative Ranking 2014

"[…] we complied an Alternative Ranking (Excluding Award Factor) where the indicators of the number of alumni and staff winning Nobel Prizes and Fields Medals are not used. The Alternative Ranking (Excluding Award Factor) is based on the rest 4 indicators used in ARWU, namely the number of highly cited researchers, 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, and their respective weights remain unchanged with a total weight of 70%"[4]

World Rank	Alternative Rank	University	PCP (ARWU)	PCP (Alternative ranking)
201-300	201-300	University of Lisbon	22.8	26.8
301-400	301-400	University of Porto	20.3	24.1
401-500	401-500	University of Coimbra	16.2	19.2

III.   ARWU-FIELD 2014

A Metodologia relativa aos cinco ARWU Field Rankings de 2014 é apresentada em anexo.

Não há Universidades portuguesas nos rankings de SCI - Natural Sciences and Mathematics, LIFE - Life and Agriculture Sciences, MED - Clinical Medicine and Pharmacy e SOC - Social Science.

Academic Ranking of World Universities in Engineering/Technology and Computer Sciences –ARWU-ENG 2014
http://www.shanghairanking.com/FieldENG2014.html

World Rank	Europe Rank	Iberamérica rank	Portugal rank	University	Total Score	HiCi	PUB	TOP	FUND
76-100	13-20	1-2	1	University of Lisbon	n/d	17	52	79.9	
151-200	38-56	5-8	2-3	University of Aveiro	n/d	0	37.4	88.1	
151-200	38-56	5-8	2-3	University of Porto	n/d	0	44.2	83.7	

n/d: O Total Score apenas é apresentado para as 50 primeiras instituições.

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[4] http://www.shanghairanking.com/Alternative_Ranking_Excluding_Award_Factor/Excluding_Award_Factor2014.html
Acedido 4/11/2014

IV.   ARWU-SUBJECT 2014

A Metodologia relativa aos cinco ARWU Subject Rankings de 2014 é apresentada em anexo.

Não há Universidades portuguesas nos rankings de CHE - Chemistry e ECO- Economics / Business.

Academic Ranking of World Universities in Mathematics ARWU-Mathematics 2014
http://www.shanghairanking.com/SubjectMathematics2014.html

World Rank	Europe Rank	Iberamérica rank	Portugal rank	University	Total Score	Alumni	Award	HiCi	PUB	TOP
76-100	22-31	3-5	1	University of Lisbon	n/d	0	0	0	70.6	70.7

n/d: O Total Score apenas é apresentado para as 50 primeiras instituições.

Academic Ranking of World Universities in Physics ARWU-Physics 2014
http://www.shanghairanking.com/SubjectPhysics2014.html

World Rank	Europe Rank	Iberamérica rank	Portugal rank	University	Total Score	Alumni	Award	HiCi	PUB	TOP
151-200	69-98	7-8	1	University of Minho	n/d	0	0	14.9	29.3	80.1

nN/d: O Total Score apenas é apresentado para as 50 primeiras instituições.

Academic Ranking of World Universities in Computer Science ARWU-Computer Science 2014
http://www.shanghairanking.com/SubjectCS2014.html

World Rank	Europe Rank	Iberamérica rank	Portugal rank	University	Total Score	Alumni	Award	HiCi	PUB	TOP
151-200	38-61	7-13	1	University of Lisbon	n/d	0	0	0	51.9	61.5

n/d: O Total Score apenas é apresentado para as 50 primeiras instituições.

V.   Anexos

Metodologia de ARWU-FIELD 20145

"**Selection of Universities**

The ranking list for ARWU - FIELD includes every institution that has any Nobel Laureates, Fields Medals, and Highly-Cited Researchers. In addition, major universities of every country with significant amount of articles indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI) are also included. In total, more than 1200 institutions have been actually ranked in each broad subject field.

Definition of Broad Subject Fields

Institutions are ranked by five broad subject fields,including

- Natural Sciences and Mathematics (SCI)
- Engineering/Technology and Computer Sciences (ENG)
- Life and Agriculture Sciences (LIFE)
- Clinical Medicine and Pharmacy (MED)
- Social Sciences (SOC)

Arts and humanities are not ranked because of the technical difficulties in finding internationally comparable indicators with reliable data. Psychology/Psychiatry is not included in the ranking because of its multi-disciplinary characteristics.

Ranking Criteria and Weights

Similar to ARWU, institutions are ranked according to their academic or research performance in each broad subject field. Ranking indicators include alumni and staff winning Nobel Prizes and Fields Medals, Highly Cited Researchers, articles indexed in Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI). Two new indicators were introduced, one is the percentage of articles published in the top 20% journals of each field, and the other is the engineering research expenditure.

For each indicator, the highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score. The distribution of data for each indicator is examined for any significant distorting effect and standard statistical techniques are used to adjust the indicator if necessary.

Scores for each indicator are weighted to arrive at a final overall score for an institution. The highest scoring institution is assigned a total score of 100, and other institutions are calculated as a percentage of the top total score. The scores are then placed in descending order.

Indicators and Weights for ARWU - FIELD

Code	Weight	SCI	ENG	LIFE	MED	SOC
Alumni	10%	Alumni of an institution winning Fields Medals in mathematics and Nobel Prizes in Chemistry and Physics since 1961	Not Applicable	Alumni of an institution winning Nobel Prizes in Physiology or Medicine since 1961	Alumni of an institution winning Nobel Prizes in Physiology or Medicine since 1961	Alumni of an institution winning Nobel Prizes in Economics since 1961
Award	15%	Staff of an institution winning Fields Medals and Nobel Prizes in Chemistry and Physics since 1971	Not Applicable	Staff of an institution winning Nobel Prizes in Physiology or Medicine since 1971	Staff of an institution winning Nobel Prizes in Physiology or Medicine since 1971	Staff of an institution winning Nobel Prizes in Economics since 1971

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[5] http://www.shanghairanking.com/ARWU-FIELD-Methodology-2014.html Acedido 03/11/2014

Code	Weight	SCI	ENG	LIFE	MED	SOC
HiCi	25%	Highly cited researchers in 5 categories: ♦ Mathematics ♦ Physics ♦ Chemistry ♦ Geosciences ♦ Space Sciences	Highly cited researchers in 3 categories: ♦Engineering ♦Computer Science ♦Materials Science	Highly cited researchers in 8 categories: ♦Biology& Biochemistry ♦Molecular Biology& Genetics ♦Microbiology ♦Immunology ♦Neuroscience ♦Agricultural Sciences ♦Plant&Animal Science ♦Ecology/ Environment	Highly cited researchers in 3 categories: ♦Clinical Medicine ♦Pharmacology ♦Social Sciences, General(Partly)	Highly cited researchers in 2 Categories: ♦Social Sciences, General(Partly) ♦Economics/ Business
PUB	25%	Papers Indexed in Science Citation Index-Expanded in SCI fields	Papers Indexed in Science Citation Index-Expanded in ENG fields	Papers Indexed in Science Citation Index-Expanded in LIFE fields	Papers Indexed in Science Citation Index-Expanded in MED fields	Papers Indexed in Social Science Citation Index in SOC fields
TOP	25%	Percentage of papers published in top 20% journals of SCI fields to that in all SCI journals	Percentage of papers published in top 20% journals of ENG fields to that in all ENG journals	Percentage of papers published in top 20% journals of LIFE fields to that in all LIFE journals	Percentage of papers published in top 20% journals of MED fields to that in all MED journals	Percentage of papers published in top 20% journals of SOC fields to that in all SOC journals
Fund	25%	Not Applicable	Total engineering-related research expenditures	Not Applicable	Not Applicable	Not Applicable

Note: SCI for Natural Sciences and Mathematics, ENG for Engineering/Technology and Computer Sciences, LIFE for Life and Agriculture Sciences, MED for Clinical Medicine and Pharmacy, SOC for Social Sciences

Definition of Indicators

Indicator	Definition
Alumni	indicates the total number of the alumni of an institution winning Nobel Prize in physics, chemistry, medicine and economics and Fields Medals in mathematics. Alumni are defined as those who obtain bachelor, Master's or doctoral degrees from the institution. Different weights are set according to the periods of obtaining degrees. The weight is 100% for alumni obtaining degrees in 2001-2010, 80% for alumni obtaining degrees in 1991-2000, 60% for alumni obtaining degrees in 1981-1990, 40% for alumni obtaining degrees in 1971-1980, and finally 20% for alumni obtaining degrees in 1961-1970. If a person obtains more than one degrees from an institution, the institution is considered once only. Nobel Laureates in Physiology or Medicine are used in both **LIFE** and **MED** ranking.
Award	indicates the total number of the staff of an institution winning Nobel Prizes in physics, chemistry, medicine and economics and Fields Medals in mathematics. Staff is defined as those who work at an institution at the time of winning the prize. Different weights are set according to the periods of winning the prizes. The weight is 100% for winners after 2011, 80% for winners in 2001-2010, 60% for winners in 1991-2000, 40% for winners in 1981-1990, and finally 20% for winners in 1971-1980. If a winner is affiliated with more than one institution, each institution is assigned the reciprocal of the number of institutions. For Nobel Prizes, if a prize is shared by more than one person, weights are set for winners according to their proportion of the

Indicator	Definition
	prize. Nobel Laureates in Physiology or Medicine are used in both **LIFE** and **MED** ranking.
HiCi	indicates the number of highly cited researchers in twenty subject categories defined and provided by highlycited.com. These highly cited researchers are assigned to five broad subject fields. If a researcher is listed in more than one subject category, his/her weight for each category is the reciprocal of the number of categories listed. Specifically, researchers who are listed in Social Science, General Category are checked one by one, and they are reclassified into three groups according to their affiliation colleges/departments. People worked at health-related units such as medical school, school of public health and school of nursing are grouped for MED ranking, people affiliated to Psychology/Psychiatry departments are not considered for the ranking, other individuals in this category are totaled for SOC ranking.
PUB	indicates the total number of papers indexed by Science Citation Index-Expanded and Social Science Citation Index in 2012 and 2013. Only publications of 'Article' type is considered. Each paper published by an institution is assigned into one of the six broad subject fields according to journals the paper was published in (Classification of Journal Categories), including above-mentioned five broad subject fields and Interdisciplinary and Multidisciplinary Sciences. If a paper is published in a multi-assigned journal (which is assigned to more than one ISI category), it is divided into related groups.
TOP	indicates the percentage of papers published in the top 20% journals of each broad subject field. Top 20% journals are defined as their impact factors in the top 20% of each ISI category according to Journal Citation Report, 2012. Papers in the top journals of each ISI category are then aggregated into the six broad subject fields and the TOP is calculated as the number of papers in the top 20% journals of a particular broad subject field to that in all journals of the field. A threshold was set for the minimum number of papers in each broad subject field for calculating TOP indicator. The threshold was defined as 10% of the average number of papers by the top three institutions in each broad subject field. If the number of papers of an institution does not meet the minimum threshold, the TOP indicator is not calculated for the institution and its weight is relocated to other indicators. Only publications of 'Article' type is considered.
FUND	indicates the total engineering-related research expenditures in 2013. This indicator is only used for ENG ranking. If the data for all institutions of a country cannot be obtained, the Fund indicator will not be considered for the institutions and its weight will be relocated to other indicators. For this ranking, the amounts of engineering-related research expenditures are obtained only for institutions in USA and some institutions in Canada.

Data Sources

Indicator: Data Source

Nobel laureates:http://www.nobelprize.org/

Fields Medals:http://www.mathunion.org/index.php?id=prizewinners

Highly cited researchers:http://www.highlycited.com/

Papers indexed in Science Citation Index-Expanded and Social Science Citation Index:http://www.webofknowledge.com

Journal Citation Report, 2012.:http://www.webofknowledge.com

Engineering-related research expenditures 2013:http://profiles.asee.org/ "[6]

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[6] http://www.shanghairanking.com/ARWU-FIELD-Methodology-2014.html Acedido 03/11/2014

Metodologia de ARWU-SUBJECT 2014[7]

"**Selection of Universities**

The ranking list for ARWU - SUBJECT includes every institution that has any Nobel Laureates, Fields Medals, and Highly-Cited Researchers. In addition, major universities of every country with significant amount of papers indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI) are also included. In total, more than 1200 institutions have been actually ranked in each subject field.

Definition of Subject Fields

Institutions are ranked in five subject fields, including Mathematics, Physics, Chemistry, Computer Sciences and Economics/Business.

Ranking Criteria and Weights

Similar to ARWU, institutions are ranked according to their academic or research performance in each subject field. Ranking indicators include alumni and staff winning Nobel Prizes, Fields Medals and Turing Awards, Highly Cited Researchers, papers indexed in Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI). A new indicator, the percentage of papers published in the top 20% journals of each field, was introduced.

For each indicator, the highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score. The distribution of data for each indicator is examined for any significant distorting effect and standard statistical techniques are used to adjust the indicator if necessary.

Scores for each indicator are weighted to arrive at a final overall score for an institution. The highest scoring institution is assigned a total score of 100, and other institutions are calculated as a percentage of the top total score. The scores are then placed in descending order.

Indicators and Weights for ARWU - SUBJECT

Code	Weight	Mathematics	Physics	Chemistry	Computer Science	Economics/ Business
Alumni	10%	Alumni of an institution winning Fields Medals in Mathematics since 1961	Alumni of an institution winning Nobel Prizes in Physics since 1961	Alumni of an institution winning Nobel Prizes in Chemistry since 1961	Alumni of an institution winning Turing Awards in Computer Science since 1961	Alumni of an institution winning Nobel Prizes in Economics since 1961
Award	15%	Staff of an institution winning Fields Medals in Mathematics since 1971	Staff of an institution winning Nobel Prizes in Physics since 1971	Staff of an institution winning Nobel Prizes in Chemistry since 1971	Staff of an institution winning Turing Awards in Computer Science since 1971	Staff of an institution winning Turing Awards in Computer Science since 1971
HiCi	25%	Highly cited researchers in Mathematics category.	Highly cited researchers in Physics and Space Science category.	Highly cited researchers in Chemistry category	Highly cited researchers in Computer Science category	Highly cited researchers in Economics/Business Category

Code	Weight	Mathematics	Physics	Chemistry	Computer Science	Economics/ Business
PUB	25%	Papers Indexed in Science Citation Index-Expanded in Mathematics fields	Papers Indexed in Science Citation Index-Expanded in Physics fields	Papers Indexed in Science Citation Index-Expanded in Chemistry fields	Papers Indexed in Science Citation Index-Expanded in Computer Science fields	Papers Indexed in Social Science Citation Index in Economics/Business fields
TOP	25%	Percentage of papers published in top 20% journals of Mathematics fields to that in all Mathematics journals	Percentage of papers published in top 20% journals of Physics fields to that in all Physics journals	Percentage of papers published in top 20% journals of Chemistry fields to that in all Chemistry journals	Percentage of papers published in top 20% journals of Computer Science fields to that in all Computer Science journals	Percentage of papers published in top 20% journals of Economics/Business fields to that in all Economics/Business journals

Definition of Indicators

Indicator	Definition
Alumni	indicates the total number of the alumni of an institution winning Fields Medals in Mathematics, Nobel Prizes in Physics, Chemistry and Economics and Turing Awards in Computer Science. Alumni are defined as those who obtain bachelor, Master's or doctoral degrees from the institution. Different weights are set according to the periods of obtaining degrees. The weight is 100% for alumni obtaining degrees in 2001-2010, 80% for alumni obtaining degrees in 1991-2000, 60% for alumni obtaining degrees in 1981-1990, 40% for alumni obtaining degrees in 1971-1980, and finally 20% for alumni obtaining degrees in 1961-1970. If a person obtains more than one degrees from an institution, the institution is considered once only.
Award	indicates the total number of the staff of an institution winning Fields Medals in Mathematics, Nobel Prizes in Physics, Chemistry and Economics and Turing Awards in Computer Science. Staff is defined as those who work at an institution at the time of winning the prize. Different weights are set according to the periods of winning the prizes. The weight is 100% for winners after 2011, 80% for winners in 2001-2010, 60% for winners in 1991-2000, 40% for winners in 1981-1990, and finally 20% for winners in 1971-1980. If a winner is affiliated with more than one institution, each institution is assigned the reciprocal of the number of institutions. For Nobel Prizes, if a prize is shared by more than one person, weights are set for winners according to their proportion of the prize.
HiCi	indicates the number of highly cited researchers in twenty categories defined and provided by isihighlycited.com. These highly cited researchers are assigned to relevant subject fields according to the category which they belong to. If a researcher is listed in more than one category, his/her weight for each category is the reciprocal of the number of categories listed.
PUB	indicates the total number of papers indexed by Science Citation Index-Expanded and Social Science Citation Index in 2012 and 2013. Only publications of 'Article' type is considered. Each paper published by an institution is assigned into relevant subject fields according to journals the paper was published in (Classification of Journal Categories). If a paper is published in a multi-assigned journal (which is assigned to more than one ISI category), it is divided into related groups.
TOP	indicates the percentage of papers published in the top 20% journals of each subject field. Top 20% journals are defined as their impact factors in the top 20% of each ISI category according to Journal Citation Report, 2012. Papers in the top journals of each ISI category are then aggregated into subject fields and the TOP is calculated as the number of papers in the top 20% journals of a particular subject field to that in all journals of the field. A threshold was set for the minimum number of papers in each subject field for calculating TOP indicator. The threshold was defined as 10% of the average number of papers by the top three institutions in each subject field. If the number of papers of an institution does not meet the minimum threshold, the TOP indicator is not calculated for the institution and its weight is relocated to other indicators. Only publications of 'Article' type is considered.

Data Sources

Indicator:Data Source

Nobel laureates:http://www.nobelprize.org

Fields Medals:http://www.mathunion.org/index.php?id=prizewinners

Turing Awards :http://awards.acm.org

Highly cited researchers:http://www.highlycited.com

Journal Citation Report, 2012.:http://www.webofknowledge.com

Papers indexed in Science Citation Index-Expanded and Social Science Citation Index:
http://www.webofknowledge.com" [8]

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[8] http://www.shanghairanking.com/ARWU-SUBJECT-Methodology-2014.html Acedido 3/11/2014