

Academic Ranking of World Universities :● Purpose, Methods and Future Efforts

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Outline

- Purpose
- Methodology, Results and Problems
- Future Efforts
- Final Remarks

Purpose of ARWU

Dream of Chinese for WCU

- **World-class university (WCU) is a dream for generations of Chinese. It's not only for pride, but also for the future of China.**
- **Since 1990s, Chinese government has launched several initiatives for research universities. The best-known one is specially designed to build WCU (985 Project).**

Goals of Top Chinese Universities

- Many top Chinese universities have setup their strategic goals as WCU.
- Most of them have also set time tables for reaching the goal of WCU. For example:
2016 for Peking University
2020 for Tsinghua University

Questions About WCU

- **What is WCU?**
- **How many WCU should there be in the world?**
- **What are the positions of top Chinese universities in the world?**
- **How can Chinese universities improve themselves to reach the goal of WCU?**

Academic Ranking of World Universities (ARWU)

- Our **original purpose** of doing the Academic Ranking of World Universities (ARWU) was to **find out the position of Chinese universities in the world and the gap between them and WCU.**
- ARWU was put on the internet upon the encouragement of colleagues from all over the world.

Features of ARWU

- ARWU uses a few internationally comparable, objective criteria and publicly accessible data that **everyone could verify in some way.**
- It has been carried out by a ranking team (**chaired by Professor Nian Cai LIU**) in the Graduate School of Education of Shanghai Jiao Tong University **for their academic interests.**
- It has been done independently **without any financial support** from any sources outside.

Methodology, Results and Problems

Selection of Universities

- Any university that has any Nobel Laureates, Fields Medals, Highly Cited Researchers, or papers published in Nature or Science.
- Major universities of every country with significant amount of papers indexed by Citation Indexes of Thomson.
- **Number of universities scanned: >2000**
- **Number of universities actually ranked: >1000**
- **Number of ranked universities on our web: 500**

Ranking Criteria and Weights

Criteria	Indicator	Code	Weight
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	<i>Alumni</i>	10%
Quality of Faculty	Staff of an institution winning Nobel Prizes and Fields Medals	<i>Award</i>	20%
	Highly cited researchers in 21 broad subject categories	<i>HiCi</i>	20%
Research Output	Articles published in Nature and Science *	<i>N&S</i>	20%
	Articles indexed in SCIE and SSCI	<i>SCI</i>	20%
Per Capita Performance	Academic performance with respect to the size of an institution	<i>Size</i>	10%

*: 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

Results of ARWU

- **Published in 2003, 2004, 2005, 2006 and 2007**
 - ✓ **Top 500 universities in the world**
 - ✓ **Top 100 universities in North and Latin America**
 - ✓ **Top 100 universities in Asia/Oceania**
 - ✓ **Top 100 universities in Europe**
 - ✓ **Statistics of top universities by region and country**
 - ✓ **Percentage distribution of top universities by country as compared with the share of global population and GDP**

Ranking by Broad Subject Fields (ARWU-FIELD)

Definition of Broad Subject Fields

- **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

ARWU-FIELD Indicators and Weights

Code	SCI	ENG	LIFE	MED	SOC
<i>Alumni</i>	10%		10%	10%	10%
<i>Award</i>	15%		15%	15%	15%
<i>HiCi</i>	25%	25%	25%	25%	25%
<i>PUB</i>	25%	25%	25%	25%	25%
<i>TOP</i>	25%	25%	25%	25%	25%
<i>Fund</i>		25%			

Results of ARWU-FIELD

- **Published in 2007 and 2008**
 - ✓ **Top 100 universities in SCI**
 - ✓ **Top 100 universities in ENG**
 - ✓ **Top 100 universities in LIFE**
 - ✓ **Top 100 universities in MED**
 - ✓ **Top 100 universities in SOC**
 - ✓ **Statistics of top universities by region & country**
 - ✓ **List of top universities by number of top fields**

Problems and Limitations of ARWU

- **Other functions** are not well taken into account
 - Education
 - Social service
- **Diversity of universities** may not be properly reflected
 - Disciplinary characteristics, such as those do very well in social science and humanities
 - Size, big is beautiful?
- **Technical problems**

Future Efforts

Study the Methodological and Technical Problems

Welcome idea and suggestions!

Update ARWU Annually

- In order to **observe changes of Universities**
- In order to **monitor countries' performance**
- **Serve as the basis of related academic studies and policy analysis**

Provide Different Rankings

- **Ranking by per capita performance**
 - **Based on reliable and international comparable data of academic staff**
- **Ranking of universities specialized or strong in engineering, medicine, etc.**
 - **Based on the classification of world universities**

Establish Database of WCU

- **Basic profiles**
 - Students, staff, programs, budget, ...
- **Strategic indicators**
 - R&D expenditure, publications and citations, international academic awards, ...
- **Data at college/department or discipline level**

Publish Annual or Biennial Report on World-Class Universities

- Not limited to top 100 but may include 500 or more **research universities**
- Provide internationally comparable indicators **as many as possible**
- Perform **detailed data analysis** rather than a composite ranking
- 2009 ?

Final Remarks

Controversy of Ranking

- Any ranking is controversial and **no ranking is absolutely objective.**
- University rankings become popular in many countries. Whether we agree or not, **ranking systems clearly are here to stay.**
- The key issue then becomes
 - **For rankers:** how to improve ranking systems?
 - **For users:** how to wisely use the rankings?

Use of Ranking

- Rankings are **information tools** for different purpose.
- Rankings should be used with **cautions**. Their methodologies must be read carefully before reporting or using their results.
- For any kind of decision-making, rankings should be used only as a starting point and **comprehensive analysis** are always necessary

Thanks for Your Attention!

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