



Is Measuring the Knowledge Creation of Universities Possible? A Review of University Rankings

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- University ranking indexes are considered very useful benchmarking tools in comparing the performance of universities around the world.
- Being placed in these prestigious indexes provides a strong advertisement for a university and helps them to attract high-quality students and academicians all over the world.
- However, there are some important deficiencies of university ranking indexes such as taking into account the whole university as a single unit without differentiating according to different fields of study or research, being limited to some well-known universities, and not considering institutional characteristics such as size or age.
- This presentation aims to explore the leading global university rankings (QS, THE, ARWU, Leiden, and URAP) to determine the similarities and differences in terms of their ranking criteria, main indicators, modeling choices, and the effects of these on the rankings.

Main criteria and the associated weights of the indicators employed in major university rankings

Criterion	Main Indicators		
	THE World	ARWU	QS World
Teaching	Reputation survey (15%)		Student to faculty ratio (20%)
	Staff to student, doctorate to bachelor's, doctorates awarded to academic staff ratios, & institutional income (15%)		
Research	Research productivity (6%)	Papers published in Nature and Science (20%)	
	Reputation survey (18%)		
	Research income (6%)		
Citations	Citations of published work (30%)	Papers indexed in SCI (-expanded) and SSCI (20%)	Citations per faculty (20%)
Quality of Education		Alumni winning Nobel Prizes and Fields Medals (10%)	Employer reputation survey (10%)
Quality of Faculty		Staff winning Nobel Prizes and Fields Medals (20%)	Global survey of academic reputation (40%)
		Highly cited researchers in 21 broad subject categories (20%)	
International Outlook	International to domestic student/staff ratios & international collaboration (7.5%)		International faculty and student ratios (10%)
Industry Income	Knowledge-transfer activities (2.5%)		
Other		Weighted scores of the five indicators to the number of full-time equivalent academic staff (10%)	

Main criteria and the associated weights of the indicators employed in major university rankings (research-based rankings)

Criterion	Indicators	
	Leiden*	URAP
Scientific productivity		Articles published in 2012-2014** and indexed by Web of Science (25%)
Research impact	The number/proportion of publications that, compared with other publications in the same field and in the same year, belong to the top 10% most frequently cited	Total number of citations excluding self-citations received in 2012-2014 for the articles published in and indexed by Web of Science (20%)
Research quality		Total number of articles multiplied by the ratio of university to world average of citations per publication in the corresponding field (20%)
		Total number of citations multiplied by the ratio of university to world average of citations per publication in the corresponding field (25%)
International collaboration	The number/proportion of publications that have been co-authored with one or more other organizations	Total number of publications made in collaboration with foreign universities (10%)
	The number/proportion of publications that have been co-authored by two or more countries	
	The number/proportion of publications that have been co-authored with one or more industrial partners	
	The number and the proportion of a university's publications with a geographical collaboration distance of less than 100 km and more than 5000 km	

Places of the top 10 universities of the base ranking (THE World) in other leading indices of year 2015

University	THE World	QS	ARWU	Leiden*	URAP
California Institute of Technology	1	5	7	6	56
University of Oxford	2	6	10	17	3
Stanford University	3	3	2	3	8
University of Cambridge	4	3	5	23	5
Massachusetts Institute of Technology	5	1	3	1	7
Harvard University	6	2	1	2	1
Princeton University	7	11	6	5	89
Imperial College London	8	8	23	33	15
ETH Zurich	9	9	20	25	39
University of Chicago	10	10	9	18	21

Places of the universities of the base ranking (THE World) in other leading indices of year 2015

University	THE World	QS	ARWU	Leiden*	URAP
Georgia Institute of Technology	41	84	101-150	49	136
Peking University	42	41	101-150	379	44
University of Tokyo	43	39	21	415	18
University of California, Davis	44	85	57	74	41
University of Hong Kong	44	30	151-200	272	149
University of Texas at Austin	46	77	37	47	67
Tsinghua University	47	25	101-150	250	48
Wageningen UR	47	135	101-150	92	167
Humboldt University of Berlin	49	126	NA	184	69
University of Wisconsin-Madison	50	54	24	56	28

Main findings

- The synopsis of the leading university rankings reveals the variability in the actual places of the best universities across different indexes.
- Another significant issue with respect to the variety of indicators, is the measurement of the two most important functions of a university, research and teaching, together in assessing quality.
- While the variability in the actual lists can be explained partly by the variety of indicators used in measuring the fundamental criteria of higher education quality such as teaching, research, international outcome, etc., some research-based indexes even do not correlate with each other.
- Monitoring a university's trend in the rankings over time can be beneficial in developing strategies to increase the recognition of the university.

THANK YOU