

Criteria for Evaluating Indicators

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RECENT TRENDS IN RESEARCH EVALUATION

Multiplication of improvised indicators

- at the individual level
- at the institutional level (University rankings)

New Market for Indicators and Rankings

OPEN COLLECTIVE

The College Rankings Racket

By JOE NEIDERS

Published: September 28, 2012 | [541 downloads](#)

The U.S. News & World Report's annual college rankings came out

Example of a bad indicator...



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UoGuelph places first in report on Canadian universities' inventiveness

U of G Ranked Most Inventive University in Canada

The University of Guelph is Canada's most inventive university, according to a new survey. Guelph ranks No. 1 both in the number of inventions per faculty and in the number of inventions in proportion to research funding.

Campus News UG News - Tue, 2012-09-25 15:05

Top 10 Inventive Universities			
Top 10 by Faculty		Top 10 by Income	
University	Rank	University	Rank
U. Guelph	1	U. Guelph	1
Queen's	2	U. Vic	2
U. Vic	3	ETS	3
McGill	4	St. Mary's	4
ETS	5	U. Manitoba	5
U. Manitoba	6	Queen's	6
UBC	7	Lakehead	7
U. Alberta	8	Dalhousie	8
U. Montreal	9	Ryerson	9 (Tie)
U. Toronto	10	Simon Fraser	9 (Tie)
		Western	10

Source: Impact Group, August 2012

- Public Release Date: **July 5, 2012**
- The report, appendices, executive summary and *Report in Focus* are available for download from the Council's website, free of charge.



Council of Canadian Academies
Conseil des académies canadiennes

Science Advice in the Public Interest
Le savoir au service du public



INFORMING RESEARCH CHOICES: INDICATORS
AND JUDGMENT

The Expert Panel on Science
Performance and Research Funding



Council of Canadian Academies
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Science Advice in the Public Interest

www.scienceadvice.ca
www.sciencepourlepublic.ca

EXPERT PANEL MEMBERSHIP

- Rita Colwell (Chair)
- Max Blouw
- Linda Butler
- Susan E. Cozzens
- Irwin Feller
- Yves Gingras
- Jacques Hurtubise
- Gretchen Jordan
- John S. MacDonald
- Marja Makarow
- James (Jim) McGroddy,
- Tim McTiernan
- Sir Keith O’Nions
- René Simard
- Alan E. Winter
- Ronald Woodward

Panel Composition:

- 3 - research evaluation methods
- 4 - administration of granting agencies & programs
- 2 - performance measurement, management & monitoring
- 3 - private sector/industry experience
- 4 - science research community

ASSESSING INDICATORS

The Panel used the following general criteria in reviewing the indicators:

Validity	To be deemed valid for assessing science performance at the field level in the NSE, indicators must be well researched, internationally recognized, validated by existing research and past experience, and able to support cross field comparisons.
Timeliness	The indicator must relate to recent activities (data that relates to research undertaken many years previously does not reflect the current dynamics of the research environment and may lead to inappropriate funding decisions).
Behavioural Impact	The indicator should not present a high risk of resulting in unintended and negative behavioral responses in the research community.
Level of aggregation	The indicator should be relevant and valid in assessments at the field level. Appropriate levels of aggregation for each indicator are denoted by the following abbreviations: N(national), F (Field), I(institutional), G(group), R(researcher).
Transparency	The indicator should be transparent and based on publicly available methodologies and data.
Relevance to NSERC	For valid indicators types, the Panel also considered to what extent the indicator is of relevance to NSERC, particularly in the context of informing allocation or reallocation of Discovery Grant Program research funding across research fields.

Berlin Principles for Rankings, 2006

- Be transparent regarding methodology.
- Choosing indicators according to relevance and validity.
- Make weights assigned to different indicators (if used) prominent and limit changes to them.
- (IREG Ranking Audit manual, November 2011)

Not sufficient for evaluating indicators

YVES GÉHRAIS

Les dérives
de l'évaluation
de la recherche

Du bon usage
de la bibliométrie

RECHERCHE & ÉVALUATION

BEYOND BIBLIOMETRICS

Harnessing Multidimensional Indicators of Scholarly Impact

edited by BLAISE CRONIN and CASSIDY R. SUGIMOTO



Criteria for validity

- 1- Adequation of the indicator to the concept being measured
ex: thermometer vs humidity...
- 2- Indicators must change in conformity to the inertia of the object
ex: no important annual changes without a cause...
- 3- Homogeneity of the measure of the indicator
ex: no combination of indicators with arbitrary weights
- 4- Indicator raises monotonously in relation to the concept measured
ex: % of foreign students or prof as « quality » of a university...

Examples of Indicators considered invalid

The h-index and its derivatives

University rankings

Indicators based on web measures

The recent Indicator of Innovation in Universities
(Impact Group)

New ranking!

Ranking By Campus Setting :

Type of Higher Education Institution :

World Ranking 2011

University	Country	Ranking	Total Score	Setting And Infrastructure	Energy and Climate Change	Waste	Water	Transportation
University of Nottingham		1	8,033.54	1,394.54	2,534.00	1,275.00	1,155.00	1,675.00
Northeastern University		2	7,981.46	1,396.46	2,370.00	1,350.00	1,440.00	1,425.00
University of Connecticut		3	7,708.02	1,458.02	2,100.00	1,125.00	1,450.00	1,575.00
University College Cork		4	7,682.48	1,336.48	2,126.00	1,275.00	1,270.00	1,675.00
Linköping University		5	7,661.23	1,406.25	2,104.98	1,275.00	1,200.00	1,675.00
University of California, Berkeley		6	7,601.87	1,279.37	2,220.00	1,425.00	1,127.50	1,550.00

CONCLUSION

Given the increased “offer” on the market of indicators in research evaluation leading to policy decisions, it is urgent that high ranking managers give more time to the the analysis of the exact meaning of the chosen indicators instead of jumping into the bandwagon of the latest “indicators” of something using anything that just happens to be measurable.

The lack of critical reflections on the perverse effects of the use of most existing indicators on the dynamic of higher education institutions could lead to very bad policy decisions affecting their fundamental mission of adequately training the next generation of citizens to produce enlightened, original and critical minds.