

Who writes reviews? Can they be used to evaluate research?

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Abstract

It is easy to count the number of reviews from a country or research institution and to express this as a percentage of total research papers. The percentage of review has doubled between 1981 and 2007 and it can now potentially be used as an additional indicator of research esteem, assuming that review authors have been chosen by journal editors on the basis of merit.

An analysis of AIDS research papers from 2003-07 shows that the research articles from the leading authors of reviews are both numerous and well-cited, hence the authors are well chosen. Comparison of the percentages of countries' AIDS papers that are reviews with the corresponding values for all science reveals their relative standing. These percentages also correlate positively with citation data, although they would not be expected to tell the same story.

1 Introduction

It is very simple to count reviews as a fraction of the sum of articles + reviews in the output of a country or research institution, and this percentage has been steadily rising, from 2.5% in the early 1980s to over 5% in 2007. Countries (see Table 1) vary greatly in the percentage of their research output that is classed as reviews. We hypothesise that most reviews are commissioned by journal editors from leading scientists, and therefore that this percentage can be used as a measure of a country's or institution's esteem.

We examine the hypothesis with respect to a large sample of AIDS papers from the Web of Science for 2003-07.

Table 1 List of 20 countries used for analysis, with their ISO digraph codes and the percentage of their science research output (articles + reviews) classed as reviews in 2003-07

<i>Code</i>	<i>Country</i>	<i>% reviews</i>
UK	UK	7.73
AU	Australia	6.78
US	USA	6.65
CH	Switzerland	6.65
NL	Netherlands	6.51
CA	Canada	6.18
BE	Belgium	6.01
DK	Denmark	5.55
DE	Germany	5.46
IT	Italy	5.41
FR	France	4.89
ZA	South Africa	4.85
World		4.81
SE	Sweden	4.52
ES	Spain	4.40
IN	India	2.92
JP	Japan	2.81
TH	Thailand	2.72
BR	Brazil	2.59
CN	China (PR)	1.40
KR	South Korea	1.24

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2 Characteristics of reviews and reviewers

Reviews tended to have fewer authors than research articles (Figure 1) and fewer addresses (Figure 2), so making it easy to credit their countries or research institutions with their production.

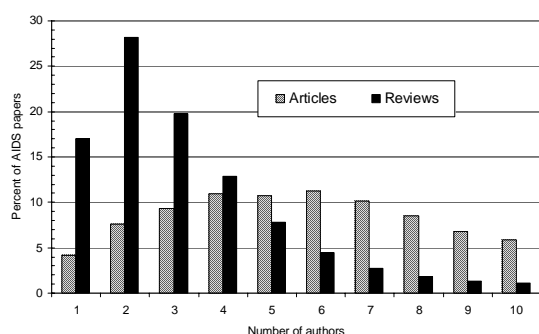


Figure 1. Distribution of author numbers for world AIDS papers in the Web of Science, 2003-07

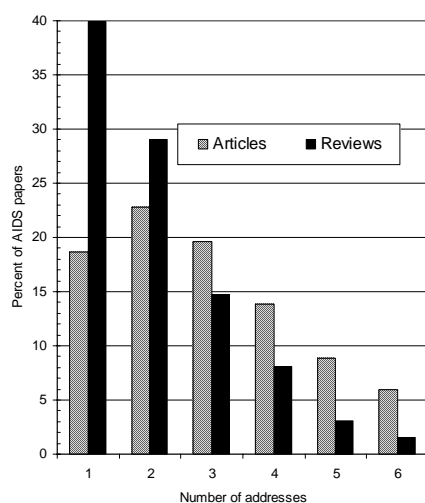


Figure 2. Distribution of numbers of addresses for world AIDS papers in the Web of Science, 2003-07

The review authors tended also to write a lot of articles, and in fact the authors with many articles usually also wrote reviews (Figure 3). The leading review authors (the 88 who wrote at least one per year) averaged 34 articles in the five years, and these were 50% more highly

cited than articles by others in 2003 and 2004, and had double the presence of the others in the top first and second centiles (see Table 2), and over 50% more in the fifth and tenth centiles of citation counts. So the research by these leading reviewers was clearly substantial in quantity and superior in impact, and this suggests that they were well chosen for the job of writing reviews.

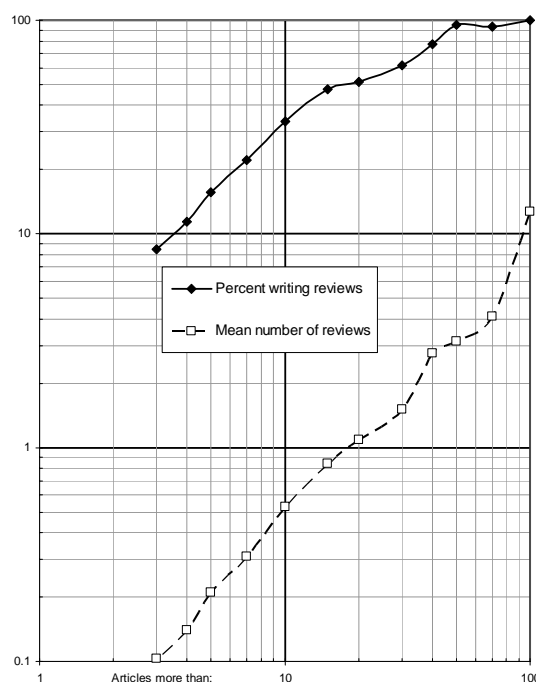


Figure 3. Propensity of authors of given numbers of AIDS articles in 2003-07 to write reviews (black diamonds) and numbers of reviews that they wrote (open squares). For example, of those authors with 30 or more articles, 60% wrote reviews and the mean number was about 1.5 reviews

Table 2. Distribution of AIDS articles in 2003 & 2004 with authors with 5 reviews in 2003-07 (R) and other authors (Non-R) by % presence in top centiles of citations thru April 2008.

2003	R		Non-R		Rat.
	Cites	N	N	%	
1%	105	10	38	0.91	2.54
2%	75	17	81	1.95	2.03
5%	49	36	210	5.05	1.66
10%	33	86	429	10.32	1.94

2004 Centile	Cites	R		Non-R		Rat.
		N	%	N	%	
1%	91	9	2.05	38	0.88	2.32
2%	65	18	4.10	80	1.86	2.21
5%	40	33	7.52	210	4.88	1.54
10%	27	75	17.08	419	9.73	1.76

3 Comparison of indicator values with other measures

It therefore seems that we can use the fraction of a country's papers that are reviews as an indicator of its standing, at least in the sub-field of AIDS research.

Figure 4 shows these fractions, which can be compared with the percentages in Table 1, representing all science, to show which countries are well esteemed, both absolutely and relatively, in the sub-field. Many countries do less well relatively in AIDS than in all science, but India is an exception.

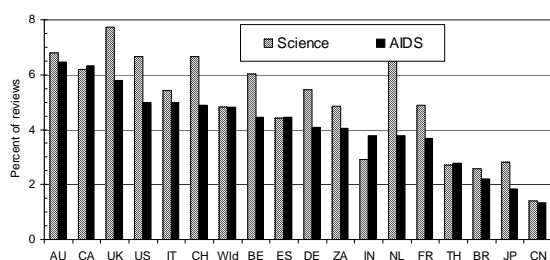


Figure 4. Percentages of leading countries' AIDS papers (2003-07) classed as reviews, and the corresponding percentage for all science, 2004-07. *Note: percentages for AIDS papers all multiplied by 0.578 so that world means are the same*

Figures 5 and 6 show that this indicator correlates positively with mean potential citation impact (based on journals) and the actual citation impact for 2003-04 papers, both calculated relative to the respective world means. The correlation is only modest, as the review percentage refers to a country's top researchers whereas the mean citation values are derived from its whole output.

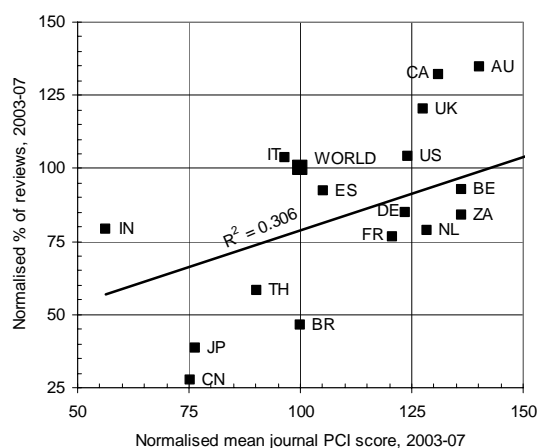


Figure 5. Plot of percentage of reviews against mean journal potential citation impact (five year citation window) for 17 countries in AIDS research, 2003-07. *Note: both indicators normalised to world mean = 100*

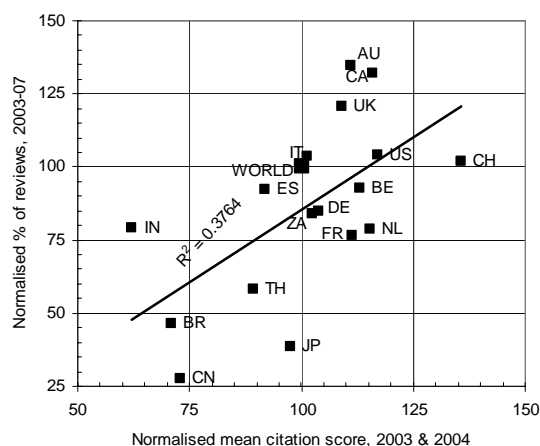


Figure 6. Plot of percentage of reviews against mean actual citation counts in 2003 and 2004 (citations thru April 2008) for 17 countries in AIDS research, 2003-07. *Note: both indicators normalised to world mean = 100*

4 Discussion

It is always useful to have additional indicators of research excellence as one number cannot be expected to capture the essence of a field or sub-field. The percentage of papers that are reviews is simple to use, and since reviews are now quite numerous, it is worth further investigation.