

A response to ‘Discussion about the new Nature Index’

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Disclosures: NC and MG are employees of Nature Publishing Group who own and maintain the Nature Index.

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Dear Sir,

We welcome the comments by Haunschild and Bornmann (2014) on the beta release of the Nature Index (natureindex.com). Nature Publishing Group (NPG) actively seeks constructive feedback from the researcher community we serve, and our aim is to iterate and improve the Nature Index in response to such feedback.

Currently, the Nature Index is a database that tracks the affiliations of original research articles published in 68 natural science journals independently selected by active scientists as the journals in which they would most like to publish their best research (Campbell and Grayson, 2014). A 12-month rolling window of data is organized and made available under a Creative Commons license at natureindex.com. The Nature Index provides absolute counts of high-quality publication productivity at the institutional and national level, and as such is one indicator of high-quality research output across the globe.

NPG does not intend the Nature Index to be a ranking and have quite deliberately not referred to it as such anywhere — comparisons of countries or institutions derived from Nature Index data need to be interpreted in context. Nor should the Nature Index be used as a research assessment tool in isolation from other quantitative and qualitative sources of relevant information. The dataset is

limited to a relatively small proportion of total research articles, covers the natural sciences only, and outputs are non-normalized.

We believe there is value in recording trends of absolute counts of high-quality research outputs, in the same way as it is useful to monitor a country's gross domestic product (GDP). Tracking the relative contributions that organizations, countries and even specific collaborations or projects make to an absolute measure of high-quality research output is useful, not least to understand the countries and institutions whose strategic direction matters most to the global research enterprise. Of course, analyses of normalized publication patterns are instructive too. This is exemplified throughout the recent supplement to *Nature* (Nature Index Global 2014) which layers additional measures on raw Nature Index data. In that supplement, we encourage users to combine the free-to-access Nature Index data with information from other sources.

Haunschild and Bornmann (2014) question both the sample size of 68 Nature Index journals, and the validation of selected journals by an online survey sent to 100,000 scientists. The independent panels of active scientists who selected the journals aimed initially for fewer than 100 titles — enough to provide inclusivity of all disciplines but sufficiently selective to ensure that the journals truly reflect the upper tiers of research achievement as judged by peers. In disciplinary terms, the aim of the panel chairs in selecting panellists was to draw from the main disciplines of natural science. Such diversity was also the aim in selecting recipients of the survey. The survey also sought to represent geographical diversity with roughly equal representation from North America, Europe and Asia. As such, this process was by definition non-random. The response rate to the survey of 2.8% is not unusual for such large-scale surveys of researchers. Having eliminated those respondents who had not published research in the previous two years, we received a total of 2,848 survey responses.

There was a very high degree of consensus between the journals that were most-preferred based on individual panel member preferences and the survey data. Inevitably, there was less overlap towards the lower end of the panellists' and survey respondents' respective priority lists. In terms of drawing the line on which journals to include, the panel chairs based their ultimate decision to a large extent on those where there was consensus between what panel members thought and what the survey showed. Regardless, as we stated in the supplement (pS53): "the process is founded on a pragmatically minded aggregation of judgements, and the lower cut-off point is entirely subjective." To put it another way: the panel's aim was not to produce a definitive list of the most-preferred journals across the natural sciences but rather to settle on a pragmatic, reasonably consensual and evolving list that most researchers would agree provides a useful indicator of high-quality research

output. The Nature Index 2014 Global supplement provides full details of the process by which journals were selected for the Nature Index (ppS52–S53). The current journals tracked by the Nature Index will be reviewed again in 2015 using independent panellists of active scientists, and there are plans to expand coverage of the Nature Index to include the clinical sciences.

We agree with Haunschild and Bornmann (2014) on the relative merits of article- versus journal-level metrics for research evaluation. For the avoidance of doubt, journal impact factors were not considered by the Nature Index panellists in their selection of journals for inclusion in the Nature Index. The selection process reflected scientists' qualitative perceptions of journal quality only. Indeed, one of the advantages in the Nature Index approach to compiling a selection of the community's most-preferred journals is that it is not affected by well-established, discipline-specific variations in citation patterns that, for example, would tend to favour areas such as genetics and materials science over an area like geoscience if citations were the focus of the selection process. Our view of the Nature Index as an indicator of high-quality research is based on the qualitative editorial assessments of individual articles by highly-selective journals informed by peer reviews contributed by the community. These journals are community-selected as being the most preferred (see also above) so, in that way, they are journals perceived by the community as doing a good job of attracting, selecting and publishing a notable proportion of the best papers in the fields they cover.

Citations to individual articles are a good proxy for academic impact, but also have limitations. For example, it is acknowledged that method papers and protocols can often receive higher numbers of citations than Nobel-prize winning findings (van Noorden et al., 2014). In addition, citation counts accrue over time, and there are many cases of articles that receive few citations in the years immediately following publication that are ultimately shown to be highly influential. Article-level altmetrics increasingly play a role, and data from altmetric.com is included on dedicated article pages for each and every article featured in the Nature Index. However, in common with other metrics, such altmetrics are prone to gaming.

No one metric alone can provide an authoritative evaluation of research performance, impact or influence. Used in concert with other measures, we believe the Nature Index is a useful addition to the bibliometric toolbox. And we reiterate our desire to engage with researchers and policy-makers to improve the product on a continuous basis such that it meets the evolving needs of multiple stakeholders. Comments can be posted at natureindex.com.

References

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