

## NUMERICAL ANALYSIS OF SOME INDIVIDUAL BIBLIOMETRIC INDEXES WHEN APPLIED TO GROUPS OF RESEARCHERS

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### ABSTRACT

The h-index is a widely used bibliometric indicator for assessing individual scientists or some other units of analysis, such as groups of researchers. In particular, for the purpose of evaluating the performance of groups of individuals, the h-index is shown to exhibit a counterintuitive behavior and produce inconsistent rankings. The inconsistency problem is claimed to affect not only the h-index but also all kinds of its variants, extensions, and generalizations; whilst a large family of bibliometric indicators, which is referred to as scoring rules and includes the highly cited publications indicator, is suggested as a suitable alternative that does not suffer from incoherence issues when assessing groups. The main objective of this work is to perform an empirical comparison of some well-known bibliometric indicators, including the h-index, g-index, R-index, w-index, h(2)-index and the highly cited publications indicator, in order to identify those that behave in a satisfactory way for measuring the overall impact of groups of scientists. For this purpose, part of a previously reported citation database was used. The comparative example presented in this study covers four individual authors that are divided in two groups. The results point out that, among the analysed indicators, the h-index is the only one that presents inconsistency in the rankings, when comparing the individual scores to the aggregated ones. All the h-index's variants examined as well as the highly cited publications indicator show a coherent behavior. It is relevant to highlight that all the h-index's variants considered in this work were designed either to reduce h-index's weak sensitivity to highly cited publications (which, for obvious reasons, also stands for the highly cited publications indicator) or to measure the citation intensity in the h core. This aspect may have contributed to the distinction in the performance, improving other indicators' outcomes in the evaluation of aggregated authors comparatively to the h-index itself.

**KEYWORDS.** Bibliometric indicators. Hirsch's-index. Scientific performance.

**Main area:** EDU - PO na Educação.