High- and low-impact citation measures: Empirical applications

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ABSTRACT

This paper contains the first empirical applications of a novel methodology for comparing the citation distributions of research units working in the same homogeneous field. The paper considers a situation in which the world citation distribution in 22 scientific fields is partitioned into three geographical areas: the U.S., the European Union (EU), and the rest of the world (RW). Given a critical citation level (CCL), we suggest using two real valued indicators to describe the shape of each area's distribution: a high- and a low-impact measure defined over the set of articles with citations below or above the CCL. It is found that, when the CCL is fixed at the 80th percentile of the world citation distribution, the U.S. performs dramatically better than the EU and the RW according to both indicators in all scientific fields. This superiority generally increases as we move from the incidence to the intensity and the citation inequality aspects of the phenomena in question. Surprisingly, changes observed when the CCL is increased from the 80th to the 95th percentile are of a relatively small order of magnitude. Finally, it is found that international co-authorship increases the high-impact and reduces the low-impact level in the three geographical areas. This is especially the case for the EU and the RW when they cooperate with the U.S.