A tour of inequality

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A Tour of Inequality

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Abstract

This paper presents a concise and up-to-date tour to the realm of *inequality indices*. Originally devised for socioeconomic applications, inequality indices gauge the divergence of wealth distributions in human societies from the socioeconomic 'ground state' of perfect equality, i.e. pure communism. Inequality indices are quantitative scores that take values in the unit interval, with the zero score characterizing perfect equality. In effect, inequality indices are applicable in the context of general distributions of sizes – non-negative quantities such as count, length, area, volume, mass, energy, and duration. For general size distributions, which are omnipresent in science and engineering, inequality indices provide multi-dimensional and infinite-dimensional quantifications of the inherent inequality – i.e., the statistical heterogeneity, the non-determinism, the randomness. This paper compactly describes the insights and the practical implementation of inequality indices.

Keywords: Lorenz curves; Pietra and Gini indices; vertical-diameter and horizontal-diameter indices; poverty and riches indices; hill curves; Rényi spectra.

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