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Kurtosis as Peakedness, 1905–2014. *R.I.P.*

Peter H. Westfall

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Abstract

The incorrect notion that kurtosis somehow measures “peakedness” (flatness, pointiness, or modality) of a distribution is remarkably persistent, despite attempts by statisticians to set the record straight. This article puts the notion to rest once and for all. Kurtosis tells you virtually nothing about the shape of the peak—its only unambiguous interpretation is in terms of tail extremity, that is, either existing outliers (for the sample kurtosis) or propensity to produce outliers (for the kurtosis of a probability distribution). To clarify this point, relevant literature is reviewed, counterexample distributions are given, and it is shown that the proportion of the kurtosis that is determined by the central $\mu \pm \sigma$ range is usually quite small.

Fourth moment | Inequality | Leptokurtic | Mesokurtic | Platykurtic.

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