

On the Newcomb-Benford Law

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It is well known that the leading digit in tables of statistical and physical data is not evenly distributed among the digits 1 to 9. Benford (who collected a large number of data) assumed that they follow a logarithmic law, commonly known as Benford's Law, although it was proposed earlier by Newcomb. We suggest, however, that the probability of the first digit being a 1, 2, ... depends on the particular distribution function of the data. For example, the size distribution of objects which grow exponentially is found to follow the Newcomb-Benford law. On the other hand, as the experimental data discussed in this paper show, the function governing the probability of the first digit of the weight of fragments obtained from crushing a stone deviates substantially from the Newcomb-Benford Law.

Key words: Benford; First Digit Law; Newcomb; Minerals.