

REVIEW

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On the distribution theory of over-dispersion

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Abstract

An overview of the evolution of probability models for over-dispersion is given looking at their origins, motivation, first main contributions, important milestones and applications. A specific class of models called the Waring and generalized Waring models will be a focal point. Their advantages relative to other classes of models and how they can be adapted to handle multivariate data and temporally evolving data will be highlighted.

Keywords: Heterogeneity; Contagion; Clustering; Spells model; Accident proneness; Mixtures; Zero-adjusted models; Biased sampling; Generalized Waring distribution; Generalized Waring process