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The generalized Gompertz distribution

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Abstract

This paper deals with a new generalization of the exponential, Gompertz, and generalized exponential distributions. This distribution is called the generalized Gompertz distribution (GGD). The main advantage of this new distribution is that it has increasing or constant or decreasing or bathtub curve failure rate depending upon the shape parameter. This property makes GGD is very useful in survival analysis. Some statistical properties such as moments, mode, and quantiles are derived. The failure rate function is also derived. The maximum likelihood estimators of the parameters are derived using a simulations study. Real data set is used to determine whether the GGD is better than other well-known distributions in modeling lifetime data or not.

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Keywords

Generalized Gompertz distribution; Gompertz distribution; Maximum likelihood estimators; Quantile; Mode and median

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