

## **A New Lifetime Model Applied to Human Mortality**

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The majority of the traditionally-used lifetime distributions allow the skewness and hazard to be modeled under restrictive conditions. In this presentation, we introduce a new lifetime model as an extension of Birnbaum-Saunders distribution, which models the hazard in a flexible way allowing increasing,  $\cap$ -shaped, decreasing and bimodal forms. We have used arguments of cumulative degradation to postulate the new distribution as a useful model for describing data of human mortality. Specifically, we find the pdf of the new model, produce graphical plots and discuss these graphs. We also compute the cdf, moments and highlight some properties of this new model. In addition, some transformations related to the new distribution are considered. The lifetime analysis allows to study the behavior of the hazard function and its limit conduct. Finally, an example from human mortality with real data that have not been analyzed previously is presented. This example showed the adequacy and flexibility of the new model to the mortality lifetime data.

## **References**

- [1] Birnbaum, Z.W. Saunders, S.C. (1969) A new family of life distributions. J. Appl. Prob. 6, 637-52.