



Two new defective distributions based on the Marshall-Olkin extension

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In survival analysis, it is common in some data sets the presence of immune elements to the event of interest. When this happens, a different approach is needed. The usual techniques are no longer viable. Thus, is necessary a model that can estimate this fraction of elements, which is called the cure rate. These cases are usually modeled by the standard mixture model. Here, we use an alternative approach based on defective distributions. Defective distributions are characterized by having density functions that integrate to values less than 1, when the domain of their parameters is different from the usual one. We use the Marshall-Olkin class of distributions to generalize two existing defective distributions, therefore generating two new defective distributions. We illustrate the distributions using a real data set.

Keywords: Cure fraction; Defective models; Gompertz distribution; Inverse Gaussian distribution; Marshall-Olkin family; Survival analysis.