

MEAN RESIDUAL LIFE

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Abstract

The mean residual life (MRL) function is the expected remaining life given survival to age x or x years after diagnosis. This function is given by $M(f) = E(X - x|X > x)$, $x \geq 0$. Grace Yang (1978) introduced an estimation of the mean residual life function and since then others, such as Kochar, Mukerjee, Samaniego (2000) have tried to improve upon this estimation. This study is a simulation study to verify the results that the restricted MRL estimator presented by Kochar, Mukerjee, and Samaniego (2000) is better than the empirical estimator proposed by Yang (1978) using mean square error and bias as our criterion. We have examined the performance of the estimators on more distributions than Kochar, Mukerjee, and Samaniego, particularly focusing on the behavior of the estimators at quantiles at the tails of the distributions. We found that for the decreasing mean residual life (DMRL) distributions in this study, the restricted estimator performed better than the empirical estimators. However, we found the empirical estimator more accurately estimates the value of MRL for the increasing mean residual life (IMRL) distributions we studied. We are also examining the performance of a new estimator, the CDT estimator, of MRL for DMRL distributions. We found that the CDT estimator performs better than the restricted estimator, but only over certain intervals in each distribution.