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A family of inverse distributions and related estimation and testing procedures for the reliability function*

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Abstract

A family of inverse distributions is derived with the help of Weibull distribution. The problems of estimating the reliability function and $P = \Pr\{X > Y\}$ are considered. Uniformly minimum variance unbiased estimators (UMVUE's) of these parametric functions are derived. In order to obtain these estimators, the major role is played by estimators of powers of parameter(s). Maximum likelihood estimators (MLE's) and estimators based on regression approach are also derived. A comparative study of different methods of estimation is done. Tests and confidence intervals are also proposed.

Key words and phrases: family of inverse distributions; reliability function; stress–strength set–up; UMVUE's; MLE's; regression approach; test and confidence intervals.

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