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Summary: This paper is devoted to estimating the reliability of a multi-component stress-strength model in an \( s \)-out-\( m (s \leq m) \) system under progressively type-II censored modified Weibull data. This type of systems functions only if at least \( s \) out of \( m \) strengths exceed the stress. Maximum likelihood and Bayes estimators of the stress-strength reliability based on conjugate prior are obtained. The associated confidence and credible intervals are also developed. The Lindley’s approximation and Markov chain Monte Carlo methods are used to compute approximate Bayes estimates. Two real data sets representing the excessive drought of Shasta Reservoir in California, USA and failure times of software model are analyzed for illustrative purposes. Further, Monte Carlo simulations are performed to compare the so developed estimates.

MSC:
62F10 Point estimation
62F12 Asymptotic properties of parametric estimators
62F15 Bayesian inference
62G30 Order statistics; empirical distribution functions
62-XX Statistics

Keywords:
Bayes estimator; bootstrap confidence interval; confidence interval; maximum likelihood estimator; Markov chain Monte Carlo simulation; stress-strength model

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References:
[14] Kizilaslan, F., Classical and bayesian estimation of reliability in a multicomponent stress-strength model based on the propor-