

An Approach to Evaluating the Prior Distribution of Weibull Parameters

M.P. Kaminskiy[‡] and V.V. Krivtsov[†]

[‡]University of Maryland, College Park, USA, [†]Ford Motor Company, Dearborn, USA

ABSTRACT

The paper considers a new procedure for the Bayesian estimation of the Weibull distribution. The suggested procedure is based on prior information available at two points of the exposure variable as the estimates of the cumulative distribution function and its standard deviation. As a result, the procedure provides joint prior and posterior distributions of the Weibull parameters and the posterior estimates of the mean and standard deviation of the CDF at any given value of the exposure variable. A numeric example is discussed as an illustration. The paper additionally elaborates on the particular case of the Weibull distribution – exponential distribution, for the scale parameter of which a new prior distribution is introduced.