(Abstract)

.

In this thesis, the focus was on Bayesian methods for finding the values of the survival functions of the two-parameter inverse Lomax distribution in the case of data of the second type for the shape parameter and the scaling parameter using three Bayesian methods, which are both the Standard Bayes method and the Bayesian expectation method (Expected Bayesian method and the Hierarchical Bayesian method. These estimation methods were derived in order to arrive at formulas for their estimates using a Squared Error Loss Function. Due to the difficulty of the mathematical operations for calculating the estimates of the survival function using Bayesian methods, the method was used. Approximate Which was proposed by researcher Lindley in 1980.

The simulation method was employed using the Monte Carlo method to generate random data for a sample consisting of three sizes (100-50-150) that follow the inverse Lomax distribution. Also, default values for the parameters (a) were determined in five models in order to obtain new, highly accurate estimators that carry The characteristics required to be present in the ideal estimator that is relied upon in the estimation process, and based on the simulation results and using the statistical criterion Integral Mean Squared Error (IMSE) as a statistical criterion for comparison, the superiority of the hierarchical Bayesian estimator for estimating the survival function over other estimation methods emerged.

The study was conducted on a real sample size of (94) observations representing the survival times in hours under treatment until death for those infected with the Coronavirus (COVD-19), which was obtained from the Al-Shifa Center at Al-Hussein Teaching Hospital in Dhi Qar Governorate for the period between (6/1/2020) Until (9/30/2020), I used the Bayesian prediction method and the Hierarchical Bayesian method under the squared error loss function for the study sample of Corona virus patients. The study concluded that the methods used in the applied aspect give appropriate and accurate estimates for the study data and agree with what the researcher reached in Experimental aspect