Record 1 of 18

Title: Estimation and prediction from gamma distribution based on record values

Author(s): Sultan, KS; Al-Dayian, GR; Mohammad, HH

Source: COMPUTATIONAL STATISTICS & DATA ANALYSIS 521430-1440 Art No. 10.1016/j.csda.2007.04.002|ISSN 0167-9473 2008

Abstract: In this paper, we introduce the record values arising from gamma distribution with three parameters. Next, we compute the means, variances and covariances of the lower record values. Then, we use these moments to calculate the best linear unbiased estimates (BLUES) for the location and scale parameters of gamma distribution. By using the BLUES, we construct confidence intervals for the location and scale parameters through Monte Carlo simulations. In addition, we discuss the point and interval prediction for the future records. (c) 2007 Elsevier B.V. All rights reserved.

Record 2 of 18

Title: Order statistics from the generalized exponential distribution and applications

Author(s): Sultan, KS

Source: COMMUNICATIONS IN STATISTICS-THEORY AND METHODS 36 (7):1409-1418 Art No. 10.1080/03610920601077188|ISSN 0361-0926 2007

Abstract: Recently, a new distribution, called generalized exponential distribution (GED), has been introduced and studied quite extensively by authors. The GED can be used as an alternative to gamma and Weibull distributions in many situations. In this article, we use the moments of order statistics from the GED derived by Raqab and Ahsanullah (2001) and Raqab (2004) to develop the correlation goodness -of-fit test for the GED. In addition, we calculate the power of the test based on some other alternative distributions. Further, we construct approximate confidence intervals for the location and scale parameters of the GED. Finally, we apply the procedures developed in the paper to real data set.

Record 3 of 18

Title: Mixture of two inverse Weibull distributions: Properties and estimation

Author(s): Sultan, KS; Ismail, MA; Al-Moisheer, AS

Source: COMPUTATIONAL STATISTICS & DATA ANALYSIS 51 (11):5377-5387 Art No. 10.1016/j.csda.2006.09.016|ISSN 0167-9473 2007

Abstract: The mixture model of two Inverse Weibull distributions (MTIWD) is investigated. First, some properties of the model with some graphs of the density and hazard function are discussed. Next, the identifiability property of the MTIWD is proved. In addition, the estimates of the unknown parameters via the EM Algorithm are obtained. The performance of the findings in the paper is showed by demonstrating some numerical illustrations through Monte Carlo simulations. (C) 2006 Elsevier B.V. All rights reserved.

Title: Comparison of estimates using record statistics from Weibull model: Bayesian and non-Bayesian approaches

Author(s): Soliman, AA; Abd Ellah, AH; Sultan, KS

Abstract: This paper develops a Bayesian analysis in the context of record statistics values from the two-parameter Weibull distribution. The ML and the Bayes estimates based on record values are derived for the two unknown parameters and some survival time parameters e.g. reliability and hazard functions. The Bayes estimates are obtained based on a conjugate prior for the scale parameter and a discrete prior for the shape parameter of this model. This is done with respect to both symmetric loss function (squared error loss), and asymmetric loss function (linear-exponential (LINEX)) loss function. The maximum likelihood and the different Bayes estimates are compared via a Monte Carlo simulation study. A practical example consisting of real record values using the data from an accelerated test on insulating fluid reported by Nelson was used for illustration and comparison. Finally, Bayesian predictive density function, which is necessary to obtain bounds for predictive interval of future record is derived and discussed using a numerical example. The results may be of interest in a situation where only record values are stored. (c) 2006 Published by Elsevier B.V.

Title: Exact prediction intervals for exponential lifetime based on random sample size

Author(s): Sultan, KS; Abd Ellah, AH

Abstract: In this paper, we generalize the work by Lawless (1971) and Lingappaiah (1973) for predicting future order statistics from exponential lifetime when the sample size is a random variable. First, we derive the distributions of some pivotal quantities that can be used to predict future order statistics from exponential lifetime when the sample size is Poisson and binomial distributed. Next, we calculate the percentage points (factors) of the predictive distributions and use them to construct predictive confidence intervals for the future order statistics. To show the usefulness of our results, we present some simulation experiments. Finally, we apply our techniques to some real data sets in life testing.

Title: Inference based on order statistics from the generalized Pareto distribution and application

Author(s): Mahmoud, MAW; Sultan, KS; Moshref, ME

Abstract: In this article, we derive exact explicit expressions for the single, double, triple, and quadruple moments of order statistics from the generalized Pareto distribution (GPD). Also, we obtain the best linear unbiased estimates of the location and scale parameters (BLUE's) of the GPD. We then use these results to determine the mean, variance, and coefficients of skewness and kurtosis of certain linear functions of order statistics. These are then utilized to develop approximate confidence intervals for the generalized Pareto parameters using Edgeworth approximation and compare them with those based on Monte Carlo simulations. To show the usefulness of our results, we also present a numerical example. Finally, we give an application to real data.

Record 8 of 18

Abstract: Order statistics arising from inverse Weibull (IW) distribution are considered. Exact expression for the single moments of order statistics are derived. Also, the variances and covariances are calculated. Based on the moments of order statistics, the best linear unbiased estimates (BLUEs) for the location and scale parameters of IW distribution are obtained. In addition, these BLUEs are applied to draw inferences for the location and scale parameters of the underlying model. To show the usefulness of our results a simulation study is carried out. (C) 2002 Elsevier Science B.V. All rights reserved.

Record 9 of 18

Record 10 of 18

Abstract: In this paper, we use the correlation-type goodness-of-fit test for the logarithmically-decreasing survival distribution. This model was introduced by SULTAN, BALAKRISHNAN and CHILDS (2001) as a special case of Type-I truncated logistic distribution. The power of the test based on normal, Weibull and gamma distributions is also calculated. We also give application to real example.

Record 11 of 18

Abstract: In this paper, we first derive exact explicit expressions for the triple and quadruple moments of order statistics from the Pareto distribution. Also, we establish recurrence relations for single, double, triple and quadruple moments of order statistics from the Pareto distribution. These relations will enable one to find all moments (of order up to four) of order statistics for all sample sizes in a simple recursive manner. We then use these results to determine the mean, variance, and coefficients of skewness and kurtosis of certain linear functions of order statistics. These are then utilized to develop approximate confidence intervals for the Pareto parameters using the Edgeworth approximation. Finally, we extend the recurrence relations to the case of the doubly truncated Pareto distribution.

Title: Record values from generalized Pareto distribution and associated inference

Author(s): Sultan, KS; Moshref, ME

Source: METRIKA 51 (2):105-116 2000

Abstract: In this paper, we derive exact explicit expressions for the single, double, triple and quadruple moments of the upper record values from a generalized Pareto distribution. We then use these expressions to compute the mean, variance, and the coefficients of skewness and kurtosis of certain linear functions of record values, Finally, we develop approximate confidence intervals for the location and scale parameters of the generalized Pareto distribution using the Edgeworth approximation and compare them with the intervals constructed through Monte Carlo simulations.

ISSN: 0026-1335

Title: Higher order moments of order statistics from the power function distribution and Edgeworth approximate inference

Author(s): Sultan, KS; Childs, A; Balakrishnan, N

Editor(s): Balakrishnan, N; Melas, VB; Ermakov, S; Balakrishnan, N; Melas, VB; Ermakov, S

Source: 3rd St Petersburg Workshop on Simulation, JUN 28-JUL 03, 1998, ST PETERSBURG, RUSSIA
ADVANCES IN STOCHASTIC SIMULATION METHODS245-282 2000

Abstract: In this paper, we first derive exact explicit expressions for the triple and quadruple moments of order statistics from the power function distribution. Also, we present recurrence relations for single, double, triple and quadruple moments of order statistics from the power function distribution. These relations will enable one to find all moments (of order up to four) of order statistics for all sample sizes in a simple recursive manner. We then use these results to determine the mean, variance, and coefficients of skewness and kurtosis of certain linear functions of order statistics. We then derive approximate confidence intervals for the parameters of the power function distribution using the Edgeworth approximation. Finally, we extend the recurrence relations to the case of the doubly truncated power function distribution.

Title: Recurrence relations and identities for moments of order statistics

Author(s): Balakrishnan, N; Sultan, KS

Editor(s): Balakrishnan, N; Rao, CR; Balakrishnan, N; Rao, CR

Source: ORDER STATISTICS: THEORY AND METHODS 16149-228 1998

Title: Parametric and nonparametric estimation of P(Y<X) for finite mixtures of lognormal components

Author(s): AlHussaini, EK; Mousa, MAMA; Sultan, KS

Source: COMMUNICATIONS IN STATISTICS-THEORY AND METHODS 26 (5):1269-1289 1997

Abstract: In this paper, parametric and nonparametric estimators of the stress-strength reliability $R = P(Y < X)$ are obtained and compared when the random variables X and Y are independent and each of which is a mixture of lognormal components. 100(1 - alpha)% confidence bounds are obtained and compared in both of the parametric and nonparametric

cases. Simulation shows that the parametric point estimates are better than the nonparametric point estimates for all sample sizes. This is also true for interval estimates, particularly when the sample size N is small. As N increases, no great loss in precision occurs if Govindarajulu's bounds are used rather than the parametric bounds. The nonparametric bounds are simpler and faster to obtain.

Title: Order statistics from the doubly truncated linear-exponential distribution and its characterizations

Author(s): ElDin, MMM; Mahmoud, MAW; AbuYoussef, SE; Sultan, KS

Abstract: In this paper single and product moments of order statistics from the doubly truncated linear-exponential distribution are studied. Some recurrence relations for both single and product moments of order statistics are also derived. Two results for characterizing the linear-exponential distribution through the properties of order statistics are also presented.

Title: An identity for the product moments of order statistics

Author(s): ElDin, MMM; AbuYoussef, SE; Sultan, KS

Abstract: A general identity for the product moments of successive order statistics is given, which is valid in a class of probability distributions including Weibull, Pareto, exponential and Burr distributions.

Title: RECURRENCE RELATIONS FOR EXPECTATIONS OF FUNCTIONS OF ORDER-STATISTICS FOR DOUBLY TRUNCATED DISTRIBUTIONS AND THEIR APPLICATIONS

Author(s): ELDIN, MMM; SULTAN, KS

Abstract: General results for obtaining recurrence relations for doubly truncated continuous distributions, are established for the single and joint order statistics. We also present two applications. The first application is: recurrence relations between factorial moment generating functions, the examples considered are exponential, logistic, extreme-value, and Laplace distributions. The second application is: some recurrence relations between reliability and failure rate functions.

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