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Pareto analysis based on records

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Abstract

Estimation of the parameters of an exponential distribution based on record data has been treated by Samaniego and Whitaker [On estimating population characteristics from record-breaking observations, I. Parametric results, Naval Res. Logist. Q. 33 (1986), pp. 531–543] and Doostparast [A note on estimation based on record data, Metrika 69 (2009), pp. 69–80]. Recently, Doostparast and Balakrishnan [Optimal record-based statistical procedures for the two-parameter exponential distribution, J. Statist. Comput. Simul. 81(12) (2011), pp. 2003–2019] obtained optimal confidence intervals as well as uniformly most powerful tests for one- and two-sided hypotheses concerning location and scale parameters based on record data from a two-parameter exponential model. In this paper, we derive optimal statistical procedures including point and interval estimation as well as most powerful tests based on record data from a two-parameter Pareto model. For illustrative purpose, a data set on annual wages of a

sample of production-line workers in a large industrial firm is analysed using the proposed procedures.

Keywords:

generalized likelihood ratio test | invariant test | monotone likelihood ratio | shortest-width confidence interval | two-parameter Pareto model | uniformly most powerful test

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