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A Journal of Theoretical and Applied Statistics

Volume 47, 2013 - [Issue 5](#)

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# Pareto analysis based on records

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Pages 1075-1089 | Received 30 Nov 2009, Accepted 24 Feb 2012, Published online: 20 Jun 2012

Cite this article <https://doi.org/10.1080/02331888.2012.694440>

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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

## Acknowledgements

The authors are grateful to anonymous referees and the associate editor for their useful suggestions and comments on an earlier version of this manuscript, which resulted in a substantial improvement of this manuscript.



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