Point prediction of upper record values

U. Kamps

Institute of Statistics RWTH Aachen University 52056 Aachen GERMANY

ORAL PRESENTATION (30 minutes)

Abstract

Maximum likelihood prediction (MLP), maximum observed likelihood prediction (MOLP) and maximum product of spacings prediction (MPSP) of future upper record values is considered. For MOLP and MPSP, general forms of the predictors are stated as functions of the last observed record and an underlying parameter estimator. Properties, interrelations and comparisons in terms of mean squared error and Pitman's measure of closeness are studied. For particular distributions such as exponential, Weibull and Pareto distributions, explicit forms of the predictors are shown.

References

- Basak, P. and Balakrishnan, N. (2003). Maximum likelihood prediction of future record statistic. In: Lindqvist, B. and Doksum, K. (Eds.) *Mathematical and Statistical Methods in Reliability*. World Scientific, Singapore, 159–175.
- 2. Empacher, C., Kamps, U. and Volovskiy, G. (2023). Statistical prediction of future sports records based on record values. *Stats* **6**, 131–147 .
- Raqab, M. Z. (2007). Exponential distribution records: Different methods of prediction. In: Ahsanullah, M. and Raqab, M. Z. (Eds.) Recent Developments in Ordered Random Variables. Nova Science, Hauppauge, 239–251.
- 4. Volovskiy, G. and Kamps, U. (2020). Maximum observed likelihood prediction of future record values. *TEST* 29, 1072–1097.
- 5. Volovskiy, G. and Kamps, U. (2020). Maximum product of spacings prediction of future record values. *Metrika* 83, 853–868.
- Volovskiy, G. and Kamps, U. (2021). Comparison of likelihood-based predictors of future Pareto and Lomax record values in terms of Pitman closeness. *Communications in Statistics - Theory and Methods*, to appear.
- 7. Volovskiy, G. and Kamps, U. (2022). Likelihood-based prediction of future Weibull record values. *REVSTAT*, to appear.