

# Optimal linear combination of adjacent order statistics in quantile estimation

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## Abstract

We consider the classical problem of quantile estimation by appropriately chosen  $L$ -statistics, i.e. linear combinations of order statistics. We are especially interested in linear combinations of two adjacent order statistics. The most often used procedure is to form linear interpolation of the unknown quantile function. We introduce new criterion of optimality based on sharp bounds on the bias of the estimation of the quantile of given order by fixed order statistics. Then we show that the classical approach of linear interpolation is not the best possible.

## Keywords

Quantile function, Quantile estimation,  $L$ -statistics