On estimating quantiles using auxiliary information

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Estimation of quantiles may be of considerable interest when measuring income distribution and poverty lines. For instance, the median is regarded as a more appropriate measure of location than the mean when variables, such as income, expenditure, etc, exhibit highly skewed distributions. In sample surveys, auxiliary information is often used at the estimation stage to increase the precision of estimators of means. The use of auxiliary information has been studied extensively for estimation of means, but it has no obvious extensions to the estimation of quantiles. In this paper, we propose a novel estimator for quantiles that takes the auxiliary information into account. The proposed estimator is based upon the regression estimator of a transformation of the variable of interest. We show that the proposed estimator is consistent under some regularity conditions. A simulation study supports our finding and show that the proposed estimator can be more accurate than its competitors.