BOOTSTRAP AND JACKKNIFE REGRESSION PARAMETER ESTIMATIONS UNDER THE DIFFERENT REPLICATIONS AND SAMPLE SIZE CONDITIONS

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The bootstrap technique works by computing the desired statistic for a sub sample of the data set in a given sample data set and a desired statistic (e.g., the mean). The sub sampling is done with replacement and the size of the sample is equal to the size of the original data set. A finite total of n^n possible bootstrap sub samples exist. If it was computed the parameter estimates for each of these n^n sub samples, it would obtain the true bootstrap estimates of parameters but such extreme computation is wasteful and unnecessary in this case (Stine, 1990). The number of bootstrap replications (B) depends on the application and size of sample. In the literature , it was suggested the bootstrap replications sufficient to be B≅100 for standard error estimates, for confidence interval estimates B≅1000, for standard deviation estimate $50 \leq B \leq 100$ (Efron 1990; Leger et al., 1992).
In Jackknife, the same test is repeated by leaving one subject out each time. Thus, this technique is also called leave one out. This procedure is especially useful when the dispersion of the distribution is wide or extreme scores are present in the data set. In these cases it is expected that Jackknife could return a bias-reduced estimation.
This study shows the estimation performance of regression parameters of jackknife and bootstrap resampling techniques under the different replications and sample sizes. For illustration, it was used a real data set and a multiple regression model. The regression coefficients, standard errors and confidence intervals of the regression coefficients were estimated under the different replications and sample sizes for the data. In the result, when the larger sample size (n) is used, the smaller standard errors of $\hat{\beta}$ and the narrower confidence intervals of β_j are usually obtained. As conclusion, that taking more and more larger replications for obtaining bootstrap regression coefficients have smaller standard errors is not necessary. Therefore, obtaining bootstrap regression coefficients that have small standard errors depends on more sample size than number of repetitions.