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JACKKNIFE-2 CONFIDENCE REGIONS FOR THE RATIO OF TWO PERCENTILES

Abstract:

In the wood industry, it is common practice to compare in terms of the ratio of the same strength properties for lumber of two different dimensions, grades or species. Because United States lumber standards are given in terms of population fifth percentile, and strength problems arised from the weaker fifth percentile rather than the stronger mean, the ratio should be expressed in terms of the fifth percentiles rather than the means of two strength distributions. Percentiles are estimated by order statistics. This paper uses small samples and large samples to construct Jackknife-1 and Jackknife-2 confidence intervals with coverage rate $1-\alpha_X$ for single percentiles, and compute confidence regions for ratio of percentiles based on confidence intervals for single percentiles. Small $1-\alpha_X$ is enough to obtain good coverage rates of confidence regions most of the time. This fact will be verified by simulation.

Keywords:

Strength of lumber, Ratio of percentiles, Jackknife-1 method, Jackknife-2 method, Confidence region.

JEL Classification: C14, C15