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Refinement Rules for Prognosis and Enhanced Treatment Effect Subgroups

Recursive partitioning methods including regression trees have been widely used to describe subgroups of cancer patients with differing prognosis. We describe an alternative technique based on adaptive refinement of subgroups that allows one to control the class of subset decision rules and the fraction of patients identified by the rules.

The proposed modeling strategy characterizes subgroups through a smooth basis function representation of subgroups. The strategy allows user to control the expected number of patients in the subgroup as well as the anticipated survival or treatment effect in the targeted group. We present examples from cancer clinical trials conducted by SWOG, a US national clinical trials organization.