MODELING KAPPA IN THE PRESENCE OF MISSING DATA

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Keywords:

Topic Area of Submission: “Measures of Agreement”

Abstract
The kappa coefficient is a common index in health research for measuring the agreement of binary [1] and nominal [2] outcomes between raters. Kappa is favored because it corrects the percentage of agreement between raters by taking into account the proportion of agreement expected by chance. A value of 0 for kappa indicates no agreement beyond chance and a value of 1 indicates perfect agreement, among many of kappa’s desirable properties. Recently attention has been given to the analysis of dependent kappa coefficients. Several Generalized Estimating Equations (GEE) approached have been proposed for modeling dependent kappa [3, 4]. Most GEE approaches involve modeling the marginal probabilities of the ratings in a first set of estimating equations. A second set of estimating equations models the probability of agreement, and thus kappa, between pairwise ratings. Often agreement data are unbalanced, that is there may be missing data for some of the observations. If the data are not missing completely at random (MCAR), then GEE may produce biased parameter estimates. Here we use Robins et al.’s
approach and weight both sets of estimating equations by the inverse of the probability of having that pattern of data be observed [5]. We motivate this approach with an analysis of dental data.

REFERENCES


