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A weighted Wilcoxon estimate for the covariate-specific ROC curve. (English) Zbl 1384.62314
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Summary: The covariate-specific receiver operating characteristic (ROC) curve is an important tool for evaluating the classification accuracy of a diagnostic test when it is associated with certain covariates. In this paper, a weighted Wilcoxon estimator is constructed for estimating this curve under the framework of location-scale model for the test result. The asymptotic normality is established, both for the regression parameter estimator and the estimator for the covariate-specific ROC curve at a fixed false positive point. Simulation results show that the Wilcoxon estimator compares favorably to its main competitors in terms of the standard error, especially when outliers exist in the covariates. As an illustration, the new procedure is applied to the dementia data from the national Alzheimer's coordinating center.

MSC:

- 62P10 Applications of statistics to biology and medical sciences; meta analysis
- 62G08 Nonparametric regression and quantile regression
- 62E20 Asymptotic distribution theory in statistics

Keywords:

covariates; location-scale model; receiver operating characteristic curve; Wilcoxon method

Software:

R; [wwcode](#)

Full Text: [DOI](#)

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