Performance of Reclassification Statistics in Comparing Risk Prediction Models

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Abstract

Models for risk prediction are widely used in clinical practice to risk stratify and assign treatment strategies. Risk reclassification, or cross-stratification into clinical risk categories, can be used to assess the potential impact of new models on treatment decisions for individual patients. Measures based on this reclassification, including those assessing both calibration and discrimination, will be described and performance in practical situations examined. These will be compared to continuous or category-free measures. Simulations adding a new marker to an established or reference model will be used to estimate the type I error and power for a number of scenarios, as well as the impact of the number and type of categories. These show that the type I error is reasonable in most settings, and that the relative power varies depends on the model assumptions. These tools provide unique but complementary information.

Keywords: Risk prediction; Reclassification; Calibration; Discrimination.

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