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Efficient propensity score regression estimators of multivalued treatment effects for the treated

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Abstract

When a multivalued treatment is randomly assigned conditional on observables, valid causal comparisons for a subpopulation treated at a particular treatment level require two propensity scores — one for the treated level and one for the counterfactual level. We contribute efficient propensity score regression estimators to a class of treatment effects for the treated, under the cases when the propensity scores are unknown and when they are known. Our efficient estimator matches on a normalized propensity score that combines the true propensity score and the nonparametric estimate. Our asymptotic theory takes into account that the propensity scores are nonparametrically or parametrically estimated as generated regressors.

Keywords: propensity score, multivalued treatment, semiparametric efficiency bound, unconfoundedness, generated regressor

JEL Classification: C14, C21

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