

# Variable selection for causal inference: outcome-adaptive lasso

Susan Shortreed \*

[shortreed.s@ghc.org](mailto:shortreed.s@ghc.org)

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We will introduce the outcome-adaptive lasso for selecting variables specifically for causal inference. Traditionally, a “throw in the kitchen sink” approach has been used to select covariates for inclusion into the propensity score, but recent work shows including unnecessary covariates can impact both the bias and statistical efficiency of propensity score estimators. The outcome-adaptive lasso selects covariates for inclusion in propensity score models to account for confounding bias while maintaining statistical efficiency. This approach can perform variable selection in the presence of a large number of spurious covariates, that is, covariates unrelated to outcome or exposure. We will illustrate covariate selection using the outcome-adaptive lasso, including comparison to alternative approaches, using simulated data and in a survey of patients using opioid therapy to manage chronic pain.

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\*Kaiser Permanente Washington Health Research Institute, 1730 Minor Ave, Suite 1600, Seattle, WA 98101-1466, USA