**BIOST 2049**

**Spring 2023**

**Research Article Dissection 5A – Propensity Score Methods**

**Due 3/29/23 by 11:59 via the Assignment Link posted to Canvas**

Please read the article “Estimating causal effects of public health education campaigns using propensity score methodology” by Yanovitzky et al. found on Canvas and answer the questions below.

This is an individual assignment. You can discuss the article with your classmates, but the answers you submit should be your own.

Please be brief but write in complete sentences with appropriate interpretations (a yes or no answer will not get full credit). A few sentences is all that is necessary to answer each question.

1. What is the goal of the paper?

Estimate average treatment effects of public health education exposure on public health education effects after adjusting for individual propensity (propensity score) to be exposed to public health education.

1. Is there anything different about the propensity score methods discussed in this paper as compared to class? If so, state the differences (in words, no need for formulas).

In class, we used a 2 step procedure for propensity score adjustment. In this paper, they took care to consider imbalance in confounders and stratified by propensity score.

1. Describe briefly the complexities and potential limitations of using propensity scores.

Propensity scores only adjust for confounders that we include in the ‘confounder model’ and higher-level interactions we include in such a model. They are also not immune to measurement error and can’t automate distinguishing between confounders and mediators.

1. In the example cases, describe how propensity scores were used in the analysis and for what reason were they used?

Propensity scores were used to estimate the effects of the national youth anti-drug media campaign on, for instance, trying marijuana. They used propensity scores because, for instance, exposure to this public health education could have confounders causally prior to the campaign exposure. Someone already in a strict educational setting may be more likely to be exposed to the campaign while also being more likely to be consistent with its intended effects *a priori* compared to someone in a more lenient education setting.

1. In the example cases, did using the propensity scores work to meet the goal of the analysis?

Yes, using propensity scores met the goal of the analyses. The post-adjustment statistics were vastly different from the pre-adjustment statistcs.

1. Have you used propensity score methods before?

No, but I find them to be a very interesting way to control for confounding as opposed to adjusting by including all covariates in a single model.