

Political Science 406: Lab 3

Due on April 26, 2024

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Problem 1

Estimating a Propensity Score

In this exercise, we will explore the proposition that partisans acquire political information and form evaluations differently from nonpartisans, even given a shared political context. To test this hypothesis, we will compare self-identified Republicans with self-identified Independents and those who report no partisan preference in the 2016 American National Election Study data. (<https://electionstudies.org/data-center/2016-time-series-study/>)

Begin by recoding variable V161155 such that Republicans get a score of 1, independents/no preference respondents get a score of 0, and all others are missing.

Potential confounding variables include education (V161270), social class (V083250X), race (V161310x), region of residence (V163003), and degree of attention to politics (V161003). Recode these variables in a suitable way.

First, estimate a propensity score for Republican identification conditional on these variables:

```
temp1 <- lm(repvind ~ ed + class + race + region + attention, data=anes2008)
pscore1 <- fitted(temp1)
```

Briefly discuss the adequacy of the model, as well as the substantive patterns that you find. Make any corrections or adjustments that seem relevant.

Problem 2

Media Usage

Let's check whether Republican partisans use social media to learn about politics (V161495) more often than non-partisans — a variable called repvind below. First, set up a clean data set for the matching exercise:

```
mediadata <- na.omit(data.frame(repvind=anes2016$repvind, ed=anes2016$ed,
                                class=anes2016$class, race=anes2016$race, region=anes2016$region,
                                attention=anes2016$attention, internetnews=anes2016$internetnews))
```

Using this cleaned data set, re-estimate your propensity score model and store fitted values from that model in a new variable. With this propensity score, run a pairwise matching estimate of the effect of Republicanism on internet usage. What are your results? Check the quality of balance after matching. Experiment with the caliper, CommonSupport, BiasAdjust, and Exact parameters to the matching function. Do any of these alternative estimators change your results?

What if you change the specification of your propensity score? Do your results change meaningfully, or not? What does this finding mean?

Problem 3

Sensitivity Analysis

Carry out a sensitivity analysis of your favorite matching result from the previous problem. How bad would uncontrolled confounding have to be in order to substantially change your conclusions?

Problem 4

Other Matching Estimators

Try reanalyzing the data above using coarsened exact matching and optimal full matching. Compare your conclusions and discuss how you would select an estimator from among this set.