- Recover existing ATE w/ our method
- Asymptotically approach our $\hat{p}$ (i.e. covariates get closer to ∞) (Your $\hat{p}$ is just proxy for ())

$$\text{logit } P(T) = X\beta$$

$\hat{p}$ (logit)

p_0

Studies

① Cov's (lots that have high corr w/ T)

② RCT ⇒ ATE (like so how)

T=0 ———— T=1

$p_0 \geq 0.5$

$P(T) \geq 0.5$

(Econ)

- Educ on future earnings
  - T: grad. from college
  - Y: Income (annual)
- (Health) Smoking behavior
  - T: Smoke
  - Y: Health level ordinal scale
- ~~Priming~~
  - T: ... / placebo
  - Y: ...
- ~~Anchoring~~
  - T: high / low ...
  - Y: ...

p_0 ... $X_1 \ldots X_p$, T, Y

T=0 & $p_0 > 0.5$

T=1 & $p_0 < 0.5$

$\hat{p}_1 \perp X_1$

$\hat{p}_2 \perp X_2, X_1$

$\hat{p}_1$ ↑ up / ↓ down

$$\text{Sign } \Delta p_1 = \hat{p}_1 - p_2 \,?$$

Studies

7 HITS / Mon

① Smoking & Health — W: smoke Y: ...

② Educ & Income — W: ... college Y: ...

③ Car Accidents

④ Premarital sex — W: ... Y:

⑤ Marriage — W: married Y:

⑥ HS job — W: ... HS job Y: ... college

⑦ Drug Use — W: did drugs Y: HS GPA

① ...
② sign Δp ...
③ stopping rule ...

Randomized per diff(p_0, W) in experiment is good for the ...

W: ... Y: ?

Y_1, Y_2, Y_3

W_1, W_2, W_3

$\hat{p}_1, \hat{p}_2, \hat{p}_3$

$X_1, \ldots, X_p$

speeds ... → $p_1^{new}, \ldots, p_3^{new}$

$$p^* \xrightarrow{a.s.} p^{**}$$

$$\hat{p} := \text{Logit}(w) = X\beta_p \approx \text{BART}(X)$$

As $p \to \infty$ $\hat{p} \to p^{**}$

Natural stopping rule $|p^{**} - \hat{p}_{p_0}|$