STAT 266
Week 7

Binary Treatments vs Dose-Response

Binary Treatment T (0/1, T/C)

prima facie $Y \sim T$ $\quad \bar{Y}_T - \bar{Y}_C$

propensity score $T \sim \underline{X}$, $\hat{E}(T|\underline{X})$, $\hat{e}(\underline{x})$
e.g. logistic regression

outcome analysis. One use of $\hat{e}(x)$ (CC.2) is "matching" by regression interpolation

$Y \sim T + \hat{e}(x)$ simple OLS, coef(T)
or use smoothers to compare $Y \sim \hat{e}(x)$ each group
PSAgraphics fAIVCOVA packages

Dose-Response, Dose D, ADRF

prima facie $Y \sim D$ or $Y = f(D)$
ignores self-selection into Dose level

Hirano-Imbens

GPS Generalized Propensity Score

$GPS = \hat{E}(D|\underline{X})$ predict Dose level from confounders

outcome analysis
use GPS and chosen Dose to predict Y
$Y \approx f(GPS, D)$ e.g. 2nd degree polynomial

plot fit vs D estmate ADRF