

p.133 compliers defiers never takers always takers
 $C=1$ compliers (marginal) usually observed
 $C=0$ all others only for Treat.

include SUTVA

assignment to Group W , $A(W)$ adopted
 $Y(W)$ potential outcome, treatment
 unit level causal effect

treatment assignment on treat adopted $A(2)-A(1)$
 " " " on outcome $Y(2)-Y(1)$

CACE (subpopulation of compliers)

compliers have $A(1)=1, A(2)=2$

$$CACE = E(Y(2) - Y(1) | C=1)$$

p.134 Estimate CACE use SUTVA, ER and no defiers

p.135
$$E(Y(2) - Y(1)) = E(Y(2) - Y(1) | C=1) P(C=1) + E(Y(2) - Y(1) | C \neq 1) P(C \neq 1)$$

assume the second line away

CACE

$$E(Y(2) - Y(1) | C=1) = E(Y(2) - Y(1)) / P(C=1)$$

$\bar{Y}_2 - \bar{Y}_1$ est ITT, $P_2 - P_1$ estimates $P(C=1)$

in treat compliers + always takers
 in control always takers

$$\frac{\bar{Y}_2 - \bar{Y}_1}{P_2 - P_1} \quad \text{IV estimate}$$

$P_2 - P_1 \leftarrow 0$ if single crossover