

# **Some Population-Level Treatment Effects**

## **Applied Microeconomics**

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# Average Treatment Effect (ATE)

$$ATE = E[Y(1, \omega) - Y(0, \omega)]$$

- Average taken over the population of interest
- Could condition on some observed variables taking on particular values
- Does not depend on who gets treatment in a particular environment
- Not necessarily interesting from a policy perspective

# Average Treatment Effect on the Treated (ATT)

$$ATT = E[Y(1, \omega) - Y(0, \omega) | D(\omega) = 1]$$

- $D(\omega) = 1$  if individual with  $\omega$  is treated
- Average taken over the population of individuals who are treated in some setting
- Thus depends on who is being treated at baseline
- Effect of shutting down the program that is in place

## Average Treatment Effect on the Untreated (ATUT)

$$ATUT = E[Y(1, \omega) - Y(0, \omega) | D(\omega) = 0]$$

- Average taken over the population of individuals who are not treated in some setting
- Thus depends on who is being treated at baseline
- Effect of extending treatment to those who are not treated

## Effect Of Treatment for people at the Margin of indifference (EOTM)

$$\text{EOTM} = E[Y(1, \omega) - Y(0, \omega) | R(Y(1, \omega), C(1, \omega), \omega) = R(Y(0, \omega), C(0, \omega), \omega)]$$

- Conditions on the individual being indifferent between treatment and control
- Thus depends on who is being treated at baseline
- Generalizes to the Marginal Treatment Effect (MTE)

## Policy Relevant Treatment Effect (PRTE)

$$\text{PRTE} = E_p[Y(s, \omega)] - E_{p'}[Y(s, \omega)] \quad \text{where } p, p' \in \mathcal{P}$$

- Compares average outcomes under two different policies
- Thus depends on who is being treated at baseline and under alternative
- Changing the policy from  $p$  to  $p'$  only changes who gets treated
- PRTE is the mean difference in outcomes under the two policies