$$\phi \to \text{Males} \to \begin{cases} 1, & \text{if } M \\ 0, & \text{if } F \end{cases}$$

$$\phi \to \text{Females} \to \begin{cases} 1, & \text{if } F \\ 0, & \text{if } M \end{cases}$$

- $y_i = \alpha + \beta\, \text{Males}_i + e_i$
- $y_i = \alpha + \beta\, \text{Females}_i + e_i$
- $y_i = \beta\, \text{Males}_i + \gamma\, \text{Females}_i + e_i$

4 περιοχές (= location)

$$
\text{location} = \begin{cases} 1, & \text{south} \\ 2, & \text{midwest} \\ 3, & \text{west} \\ 4 & \text{Northeast} \end{cases}
$$

$$
\text{south}_i = \begin{cases} 1, & \text{Αν κατοικεί south} \\ 0 & \text{Αν δεν κατοικεί south} \end{cases}
$$

$$
\text{midwest}_i = \begin{cases} 1, & \text{Αν κατοικεί midwest} \\ 0, & \text{Αν δεν κατοικεί midwest} \end{cases}
$$

$$
\text{west}_i = \begin{cases} 1 & \text{Αν κατοικεί west} \\ 0 & \text{Αν δεν κατοικεί west} \end{cases}
$$

$$wage_i = \alpha + \beta Ed_i + \gamma South_i + \delta Midwest_i + \theta West + e_i$$

$\hat{\beta} = 1.11$, $\hat{\gamma} = -1.55$, $\hat{\delta} = -0.49$, $\hat{\theta} = -0.56$

$$E(wage_i | Ed_i) = \begin{cases} \alpha + \beta Ed_i, & \text{Northeast} \\ (\alpha+\gamma) + \beta Ed_i, & \text{South} \\ (\alpha+\delta) + \beta Ed_i, & \text{Midwest} \\ (\alpha+\theta) + \beta Ed_i, & \text{West} \end{cases}$$

$$\frac{\partial E(wage_i)}{\partial Ed_i} = \beta$$

$$\gamma = [\alpha + \gamma + \beta Ed_i^S] - [\alpha + \beta Ed_i^N]$$

$$= \gamma + \beta \underbrace{(Ed_i^S - Ed_i^N)}_{=0}$$