

$$\pi_{10} = \frac{e^{\beta_0 + \beta_1(10)}}{1 + e^{\beta_0 + \beta_1(10)}}$$

$$\pi_{15} = \frac{e^{\beta_0 + \beta_1(15)}}{1 + e^{\beta_0 + \beta_1(15)}}$$

$$\ln\left(\frac{\pi_{10}}{1 - \pi_{10}}\right) = \beta_0 + \beta_1(10) \quad \checkmark \checkmark$$

$$\ln\left(\frac{\pi_{15}}{1 - \pi_{15}}\right) = \beta_0 + \beta_1(15) \quad \checkmark$$

$$\ln\left(\frac{\pi_{15}}{1 - \pi_{15}}\right) - \ln\left(\frac{\pi_{10}}{1 - \pi_{10}}\right) = 5\beta_1$$

$$\beta_1 = \frac{[\text{logit}(\pi_{15}) - \text{logit}(\pi_{10})]}{5}$$

Plug this in for β_1 above