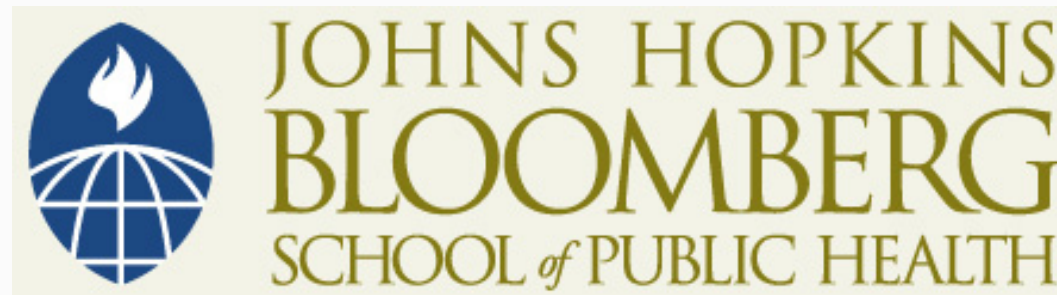


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JOHNS HOPKINS  
BLOOMBERG  
SCHOOL *of* PUBLIC HEALTH

## Lecture 6c: Practice Problem Solutions

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John McGready  
Johns Hopkins University

## Example: Wages and Education Level

1. Recall equation of regression line relating estimated mean hourly wages (U.S. \$, 1985) to years of education: from Stata . . .

$$\hat{y} = -0.75 + 0.75x$$

- a) What is the estimated mean hourly wage (in 1985) for persons with 12 years of education?

*This estimate can be computed by plugging 12 in for  $x$  in the above equation:  $\hat{y} = -0.75 + 0.75 \times 12 = \$8.25 / hr$*

- b) What is the estimated difference in hourly wages (in 1985) for persons with 16 years of education versus 12 years of education?

*These two groups differ by four years (i.e., four units of  $x$ ): so the resulting estimated mean difference in wages is*

$$(16 - 12) \times \hat{\beta}_1 = 4 \times .75 = \$3.00 / hr$$

## Example: Arm Circumference and Sex

2. Recall the regression relating arm circumference to child's sex for the random sample of 150 Nepali children less than 12 months old

$$\hat{y} = 12.5 + -0.13x$$

- In this example,  $x$  is the binary variable for sex, coded as a 1 for female children and 0 for male children; suppose  $x$  was coded as 1 for male children and 0 for female children
  - a) What would the resulting slope estimate be?

*The resulting slope estimate would compare the mean difference in arm circumference for males relative to females: this would be 0.13.*

## Example: Arm Circumference and Sex

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  - b) What would the resulting intercept estimate be?

*The resulting intercept would be an estimate of the mean arm circumference for children with  $x = 0$ , i.e., female children. Based on the results of the above model, this value would be  $12.5 - 0.13$ , or 12.37 cm.*