


Lecture 5e: Practice Problems: John McGready



Lecture 5e: Practice Problems

John McGready
Johns Hopkins University

Arm Circumference: Interaction–Height and Sex

1. The following MLR shows the result of a model relating arm circumference (cm) to height (cm) and sex (1 = female, 0 = male) with an interaction term for height and sex (height_sex). This again is based on the random sample of 150 Nepali children < 12 months old.

```

. gen height_sex= height*sex
. regress armcirc height sex height_sex

```

Source	SS	df	MS		Number of obs =
Model	149.792035	3	49.9306782		150
Residual	176.345897	146	1.20784861		F(3, 146) = 41.34
Total	326.137932	149	2.18884518		Prob > F = 0.0000
					R-squared = 0.4593
					Adj R-squared = 0.4482
					Root MSE = 1.099

arcirc	coef.	std. Err.	t	P> t	[95% Conf. Interval]
height	.1675488	.0191759	8.74	0.000	.1296506 .205447
sex	1.260939	1.771483	0.71	0.478	-2.240064 4.762062
height_sex	-.0217193	.0286107	-0.76	0.449	-.0782641 .0348254
_cons	2.143675	1.191448	1.80	0.074	-.2130371 4.496388

2

Arm Circumference: Interaction–Height and Sex

1. The following MLR shows the result of a model relating arm circumference (cm) to height (cm) and sex (1 = female, 0 = male) with an interaction term for height and sex. This again is based on the random sample of 150 Nepali children < 12 months old.

- What does the model estimate for mean difference in arm circumference between groups of male children who differ by one cm in height?
- What does the model estimate for mean difference in arm circumference between groups of female children who differ by one cm in height?
- After accounting for sampling variability, are the slopes of height for male and female children statistically significantly different?

3

Arm Circumference: Interaction–Height and Sex

1. The following MLR shows the result of a model relating arm circumference (cm) to height (cm) and sex (1 = female, 0 = male) with an interaction term for height and sex. This again is based on the random sample of 150 Nepali children < 12 months old.

d) Just for fun: Suppose sex is coded as 1 for male children, and 0 for female children. Can you determine the following?

- What would the slope estimate for height be in a MLR relating arm circumference and height with an interaction between height and sex?
- What would the coefficient estimate for height_sex be in the same model described in part 1?

4