

ECO220Y: Homework, Lecture 4 – SOLUTIONS

(1) Let's denote child height by Y and parent height by X. Here is what we know from the question:

	X	Y
Mean	68.31	68.09
Standard Deviation	1.79	2.52
Correlation	0.46	0.46

(a)

$$b_1^{(parent,child)} = r \frac{S_{(child)}}{S_{(parent)}} = 0.46 \frac{2.52}{1.79} = 0.65$$

$$b_0^{(parent,child)} = 68.09 - 0.65 * 68.31 = 23.69$$

$$child_hat = 23.69 + 0.65 * parent$$

(b)

$$b_1^{(child,parent)} = r \frac{S_{(parent)}}{S_{(child)}} = 0.46 \frac{1.79}{2.52} = 0.33$$

$$b_0^{(parent,child)} = 68.31 - 0.33 * 68.09 = 45.84$$

$$parent_hat = 45.84 + 0.33 * child$$

(c)

$$\hat{z}_y = r * z_x \Rightarrow \hat{z}_{(child)} = 0.46 * z_{(parent)}$$