1. Suppose that a random sample of 200 twenty-year old men is selected from a population and that these men’s heights and weights are recorded. A regression of weight on height yields the following:

\[
\hat{\text{Weight}} = -99.41 + 3.94 \times \text{Height},
\]

\[R^2 = 0.81\]

\[\text{SER} = 10.2,\]

where \(\text{Weight}\) is measured in pounds and \(\text{Height}\) is measured in inches.

(a) What is the regression’s weight prediction for someone who is 70 inches tall? 65 inches tall? 60 inches tall?

(b) A teenager has a growth spurt and grows 4 inches over the course of a year. What is the regression’s prediction for the increase in this teenager’s weight?

(c) The average height in this sample is 67 inches. What is the average weight for this sample?

(d) What is the fraction of the variance of weight explained by height? Does height explain a lot or little of the variation in weight?

2. On my website (http://www.uh.edu/~adkugler/ProblemSets.html) you will find a file called \(\text{CPS04}\) that contains data for full-time, full-year workers, age 25-34, with a high school diploma or B.A./B.S. as highest degree. Here, I have attached a detailed description of the data. In this exercise you will investigate the relation between workers’ age and earnings.

(a) Construct a scatterplot of earnings on age. Does there appear to be a relationship between the two variables?

(b) Run a regression of average hourly earnings (\(\text{AHE}\)) on age(\(\text{Age}\)). What is the estimated intercept? What is the estimated slope?

(c) Jennifer is a 30 year-old worker. Predict Jennifer’s earnings using the estimated regression.

(d) What is the standard error of the regression? What are the units in which SER is measured?