using the sample of men, $\hat{\beta}_{w,1}$ denote the OLS estimator constructed from the sample of women, and $SE(\hat{\beta}_{m,1})$ and $SE(\hat{\beta}_{w,1})$ denote the corresponding standard errors. Show that the standard error of $\hat{\beta}_{m,1} - \hat{\beta}_{w,1}$ is given by $SE(\hat{\beta}_{m,1} - \hat{\beta}_{w,1}) = \sqrt{[SE(\hat{\beta}_{m,1})]^2 + [SE(\hat{\beta}_{w,1})]^2}$.

Empirical Exercises

E5.1 Using the data set **CPS08** described in Empirical Exercise E4.1, run a regression of average hourly earnings (*AHE*) on *Age* and carry out the following exercises.

a. Is the estimated regression slope coefficient statistically significant? That is, can you reject the null hypothesis H_0: $\beta_1 = 0$ versus a two-sided alternative at the 10%, 5%, or 1% significance level? What is the *p*-value associated with coefficient's *t*-statistic?

b. Construct a 95% confidence interval for the slope coefficient.

c. Repeat (a) using only the data for high school graduates.

d. Repeat (a) using only the data for college graduates.

e. Is the effect of age on earnings different for high school graduates than for college graduates? Explain. (*Hint:* See Exercise 5.15.)

E5.2 Using the data set **TeachingRatings** described in Empirical Exercise E4.2, run a regression of *Course_Eval* on *Beauty*. Is the estimated regression slope coefficient statistically significant? That is, can you reject the null hypothesis H_0: $\beta_1 = 0$ versus a two-sided alternative at the 10%, 5%, or 1% significance level? What is the *p*-value associated with coefficient's *t*-statistic?

E5.2 Using the data set **CollegeDistance** described in Empirical Exercise E4.3, run a regression of years of completed education (*ED*) on distance to the nearest college (*Dist*) and carry out the following exercises.

a. Is the estimated regression slope coefficient statistically significant? That is, can you reject the null hypothesis H_0: $\beta_1 = 0$ versus a two-sided alternative at the 10%, 5%, or 1% significance level? What is the *p*-value associated with coefficient's *t*-statistic?

b. Construct a 95% confidence interval for the slope coefficient.

c. Run the regression using data only on females and repeat (b).

d. Run the regression using data only on males and repeat (b).

e. Is the effect of distance on completed years of education different for men than for women? (*Hint:* See Exercise 5.15.)