

### **Exercise 7B.1**

Linear regression was used to investigate the relationship between age (years) and systolic blood pressure (mmHg) in a sample of adults ranging from 29 to 69 years old. Partial Stata output is on the next page.

- (a) How many people were in the sample?
  
  
  
  
  
  
  
  
- (b) Test whether age is a significant predictor of SBP (at the  $\alpha = 0.05$  level).
  
  
  
  
  
  
  
  
- (c) What is the coefficient of determination for this model? Interpret this quantity.
  
  
  
  
  
  
  
  
- (d) Calculate a 95% confidence interval for the population slope. Will 0 be in this interval?

Output for problem on previous page:

```
. regress sbp age
```

Source	SS	df	MS	Number of obs	=	29
Model	6110.10173	1	6110.10173	F( 1, 27)	=	66.81
Residual	2469.34654	27	91.4572794	Prob > F	=	0.0000
Total	8579.44828	28	306.408867	R-squared	=	0.7122
				Adj R-squared	=	0.7015
				Root MSE	=	9.5633

  

sbp		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
age		.9493225	.1161445			
_cons		97.07708	5.527552			

## Exercise 7B.2

In a study of factors associated with levels of HDL, the “good cholesterol”, investigators were interested in whether or not a person’s education level might be a predictor of HDL (mg/dL). Education was measured as the number of years of education a person had. The researchers used linear regression and partial Stata output is on the next page.

- (a) Test whether years of education is a significant predictor of HDL (at the  $\alpha = 0.05$  level).

(b) What is the coefficient of determination for this model? Interpret this quantity.

(c) If you were to compute a 95% confidence interval for the population slope, would 0 be in the interval? Why or why not?

Output for problem on previous page.

```
. regress hdl education
```

Source	SS	df	MS	Number of obs	=	91
Model	1.52391634	1	1.52391634	F( 1, 89)	=	0.01
Residual	22655.4651	89	254.555788	Prob > F	=	0.9385
Total	22656.989	90	251.744322	R-squared	=	0.0001
				Adj R-squared	=	-0.0112
				Root MSE	=	15.955

  

hdl	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
education	-.0322503	.4168166			
_cons	52.33561	4.781676			