

**Econ 326**  
**Assignment 5**

The due date for this assignment is Thursday February 16.

- The econometrician obtained the following output from regressing the dependent variable “liver” against the independent variable “alcohol” and a constant, where “liver” is the number of liver disease deaths per 100,000 people in a country, and “alcohol” is consumption of alcohol in liters per capita in a country:

Source	SS	df	MS			
Model	1554.38867	1	1554.38867	Number of obs =	21	
Residual	1305.8181	19	68.7272685	F( 1, 19) =	22.62	
Total	2860.20677	20	143.010338	Prob > F =	0.0001	
				R-squared =	0.5435	
				Adj R-squared =	0.5194	
				Root MSE =	8.2902	

  

liver	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
alcohol	3.586388	.7541228	A	B	C	D
_cons	10.85482	2.802408	3.87	0.001	4.989313	16.72033

- Several entries in the output were replaced with letters. Find A - D. Show your work.
  - Test at 5% significance level that the coefficient of “alcohol” is 5 (against the alternative that it is different from 5).
  - Test the same hypothesis as in part (b) at 10% significance level.
- The econometrician obtained the following output from regressing the dependent variable `ln_heart` against the independent variable `ln_alcohol` and a constant, where `ln_heart` is the natural logarithm of the number of heart disease deaths per 100,000 people in a country, and `ln_alcohol` is the natural logarithm of consumption of alcohol in liters per capita in a country:

ln_heart	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ln_alcohol	A	B	C	D	-.6114369	-.0952172
_cons	5.361366	.1324818	40.47	0.000	5.084078	5.638654

- Several entries in the output were replaced with letters. Find A - D if the number of observations was 21. Provide careful explanations for your answers.
- What is the interpretation of the coefficient on `ln_alcohol`? Explain.

- (c) Test at 5% significance level  $H_0 : \beta \geq 0$  against  $H_1 : \beta < 0$ , where  $\beta$  is the coefficient on `ln_alcohol`.

3. A regression of `y` against `x` produced the following output:

Source	SS	df	MS	Number of obs = 25		
Model	2.44742117	1	2.44742117	F( 1, 23) =	2.96	
Residual	19.0472082	23	.828139485	Prob > F =	0.0990	
Total	21.4946293	24	.895609556	R-squared =	0.1139	
				Adj R-squared =	0.0753	
				Root MSE =	.91002	

  

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
x	.3049247	.177374	A	B	C	D
_cons	3.109574	.1821318	17.07	0.000	2.732806	3.486343

- (a) Find A-D. Provide careful explanations for your answers.
- (b) Let  $\beta$  denote the coefficient on `x`. Test at 5% significance level  $H_0 : \beta = 0$  against  $H_1 : \beta \neq 0$ .
- (c) Test at 5% significance level  $H_0 : \beta \leq 0$  against  $H_1 : \beta > 0$ .
- (d) Explain the difference between the outcomes in parts (b) and (c).