Stat 2216 Spring 2009

Statistical Methods R. Claycombe

Second Exam

Write all answers in your blue book and show all work there. Return your exam and printout(s) in your blue book.

30 pts.

1)

Q	P	A
2	5	2
2	2	3
3	4	6
4	2	8

a) Find by hand (show work) the regression equation where Q is a function of A .

b) Find the standard error of the estimate and the standard error of the slope.

c) Is the slope significantly different from zero if $\alpha = .01$? Explain.

d) Does it make a difference if you have a one tail test? Explain.

e) Find the predicted value of Q and a 95 percent prediction interval for $\mu_{Q,A}$ when A is 5.

15 pts.

2) a) Use the data in question 1 to estimate a multiple regression where Q is a function of A and P. Use the normal equations.

b) Compare the effect of A in 2a to what you found in 1a and explain why it does or does not differ much between the two regressions.

25 pts. **Computer Problem**

3) Open Homevalue file in the Chap. 15 Stat2216 files folder with either Excel or SPSS. Take care to read through the question, so that you'll have all that you need. Run a regression with Score as the dependent variable and the RecRes and Afford as the independent variables.

a) Determine which, if any, of the variables are statistically significant (α=.01) and

b) Are there any outliers? Explain.

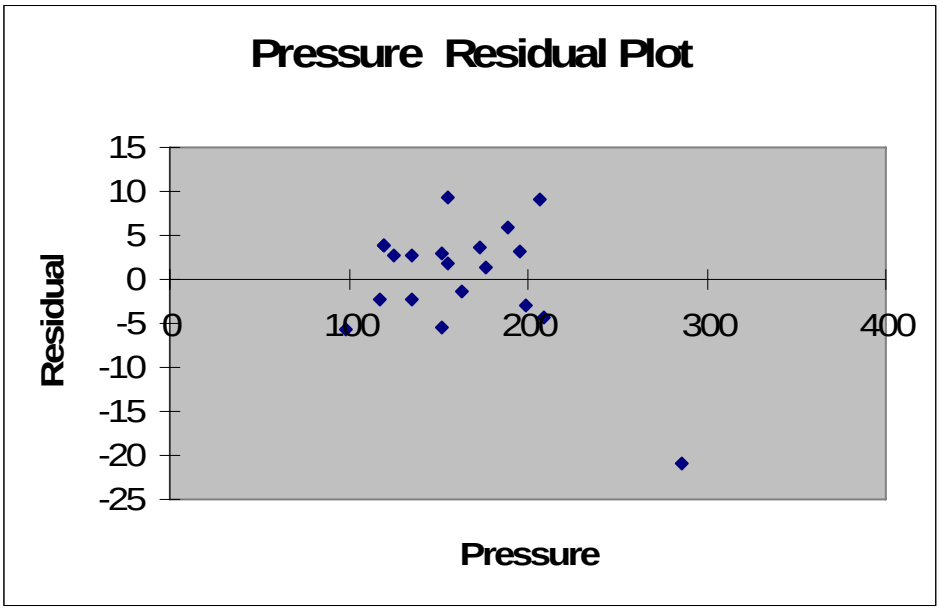
c) Are there any influential observations? Explain.

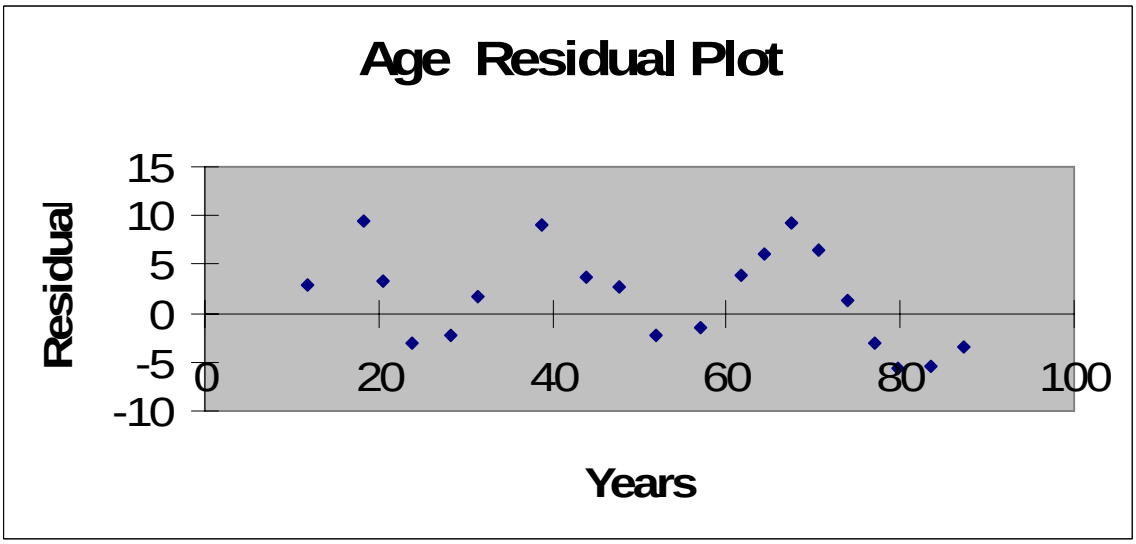
d) Do you think that there is a collinearity problem? Explain.

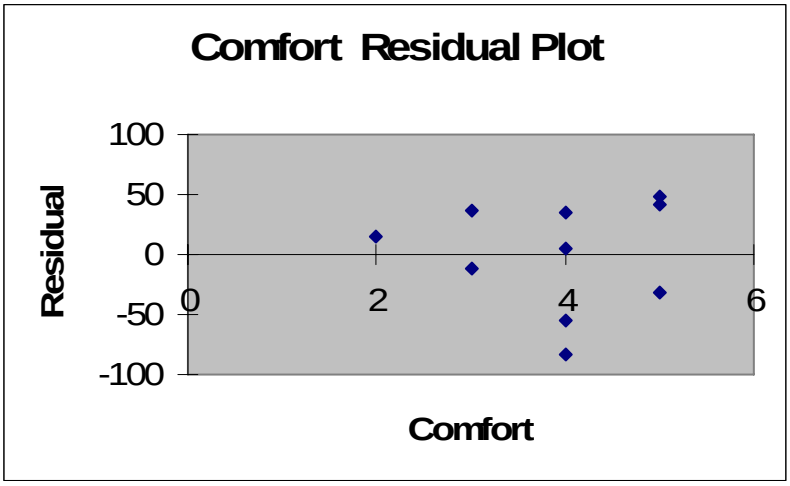
e) Check for 2 other econometric problems (your choice) that seem relatively likely to occur in this model.

15 pts.

4) What, if anything, is wrong with each of the plots below. What do we call the problems? How are the regression results affected by the problem?







Standard Residuals for Comfort
0.348274
0.828636
-1.2306
-0.25778
-1.86529
0.787232
0.12212
-0.71765
0.914866
1.070189

15 pts.

5 a) Suppose that you have a regression with a Durbin Watson stat of 4.25. It must be an error, right? Why? What value do you want your Durbin Watson to be close to? Why?

b) Suppose that you have a regression where the adjusted R^2 is negative. Must it be an error? Why? How do you interpret it?

I have neither given nor received unfair aid on this test nor am I aware of anyone else who has.

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